NOT YET SCHEDULED FOR ORAL ARGUMENT

Appeal No. 17-7035 (Consolidated with Appeal No. 17-7039)

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

American Society for Testing and Materials; National Fire Protection Association, Inc.; and American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.,

Appellees,

V.

Public.Resource.Org, Inc.,

Appellant.

Appeal from the United States District Court for the District of Columbia Hon. Tanya S. Chutkan

1:13-cv-1215-TSC 1:14-cv-0857-TSC

PUBLIC APPENDIX – MATERIAL UNDER SEAL IN SEPARATE SUPPLEMENT VOLUME 3 (JA1271-JA1779)

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TABLE OF CONTENTS

Page

AMERICAN SOCIETY FOR TESTING AND MATERIALS ET AL. V. PUBLIC.RESOURCE.ORG, INC.

VOLUME 1:

U.S. District Court for the District of Columbia Docket Sheet, AMERICAN SOCIETY FOR TESTING AND MATERIALS et al. v.
PUBLIC.RESOURCE.ORG, INC. ASTM-DKT-000 DOCKETJA1
Complaint, AMERICAN SOCIETY FOR TESTING AND MATERIALS et al. v. PUBLIC.RESOURCE.ORG
ASTM-DKT-001
Exh A; ASTM COPYRIGHT REGISTRATIONS
ASTM-DKT-001-1
Exh B; NATIONAL FIRE PROTECTION ASSOCIATION, INC. COPYRIGHT REGISTRATIONS
ASTM-DKT-001-2
Exh C; AMERICAN SOCIETY OF HEATING, REFRIGERATION,
REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC. COPYRIGHT REGISTRATIONS
ASTM-DKT-001-3JA61
Exh G; Incorporation by Reference: ASTM D4239: Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods
ASTM-DKT-001-7
PLAINTIFF NATIONAL FIRE PROTECTION ASSOCIATION, INC.'S
OPPOSITION TO MOTION TO COMPEL DISCOVERY ASTM-DKT-046JA121

Page 4 of 537

Page
DECLARATION OF CHRISTIAN DUBAY IN SUPPORT OF PLAINTIFF NATIONAL FIRE PROTECTION ASSOCIATION
ASTM-DKT-046-1JA116
PLAINTIFFS' MEMORANDUM OF LAW IN SUPPORT OF THEIR MOTION FOR SUMMARY JUDGMENT AND FOR A PERMANENT INJUNCTION ASTM-DKT-118-01
DECLARATION OF DENNIS J. BERRY IN SUPPORT OF PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT
ASTM-DKT-118-03
Exh A; Certificate of Registration - National Electrical Code, 2011 Edition ASTM-DKT-118-03, Ex. A
Exh B; Certificate of Registration - National Electrical Code, 2014 Edition ASTM-DKT-118-03, Ex. B
Exh J; Email from Vacay Promo Team to Dennis Berry re: Ebay Violation?, dated 01/22/15
ASTM-DKT-118-03, Ex. J
Exh K; Email from Scott Schwartz to Dennis Berry re: Use of Electronic NEC, dated 10/13/15
ASTM-DKT-118-03, Ex. K
Declaration of Steven Cramer ASTM-DKT-118-04JA158
Declaration of James Golinveaux ASTM-DKT-118-05 JA163
Declaration of Randy Jennings ASTM-DKT-118-06JA167
Declaration of Thomas B. O'Brien, Jr. ASTM-DKT-118-07JA172

1	Page
Exh 1; Certificate of Registration: ASTM D86-07 Standards Test Methods for Distillation of Petroleum Products at Atmospheric Pressure	N 102
ASTM-DKT-118-07, Ex. 01	1183
Exh 2; Certificate of Registration: ASTM D975-07 Standard Specification for Diesel Fuel Oils	
ASTM-DKT-118-07, Ex. 02	186
Exh 3; Alphanumeric List: ASTM Standards ASTM-DKT-118-07, Ex. 03	\ 189
Exh 4; Certificate of Registration: 1999 Annual Book of ASTM Standards ASTM-DKT-118-07, Ex. 04	A 193
Exh 5; Form and Style for ASTM Standards ASTM-DKT-118-07, Ex. 05	\ 196
Exh 6; Designation ASTM D 86-07; Standard Test Methods for Distillation of Petroleum Products at Atmospheric Pressure	
ASTM-DKT-118-07, Ex. 06	12//
Exh 7; Designation ASTM D 975-07 Standard Specification for Diesel Fuel Oi ASTM-DKT-118-07, Ex. 07	
Exh 8; Designation ASTM D 396-98 Standard Specification for Fuel Oils ASTM-DKT-118-07, Ex. 08	A 327
Exh 9; Standard Test Method for Density and Relative Density (Specific Gravin of Liquids by Bingham Pycnometer	ty)
ASTM-DKT-118-07, Ex. 09	1333
Exh 17; ASTM D8607 Viewer ASTM-DKT-118-07, Ex. 17	A 339
Evh 18: Standard Consumer Safety Specification for Infant Wellzers	
Exh 18; Standard Consumer Safety Specification for Infant Walkers ASTM-DKT-118-07, Ex. 18	\ 344

	Page
Declaration of James T. Pauley in Support of Plaintiff's Motion for Summ Judgment	ary
ASTM-DKT-118-08	JA364
Declaration of Stephanie Reiniche ASTM-DKT-118-10	JA379
Exh 3; Certificate of Registration - ANSI/ASHRAE/IESNA Standard 90 1 Energy Standard for Buildings Except Low-Rise Residential Buildings ASTM-DKT-118-10, EXH 3	
Exh 4; Certificate of Registration - ANSI/ASHRAE/IESNA Standard 90 1 Energy Standard for Buildings Except Low-Rise Residential Buildings ASTM-DKT-118-10, EXH 4	1-2007,
Exh 5; Certificate of Registration - ANSI/ASHRAE/IESNA Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings ASTM-DKT-118-10, EXH 5	1-2010,
Declaration of James Thomas ASTM-DKT-118-11	JA396
Declaration of Jordana S. Rubel ASTM-DKT-118-12	JA403
Exh 1; Expert Report of John C. Jarosz; dated 06/05/15 ASTM-DKT-118-12, Ex. 01 (Material Under Seal)	JA409
Exh 2; Rule 30(b)(6) Deposition of Public.Resource.Org, dated 02/26/15 ASTM-DKT-118-12, Ex. 02	
Exh 3; Deposition of Carl Malamud, dated 02/27/15 ASTM-DKT-118-12, Ex. 03 (Material Under Seal)	JA602
Exh 4; Rule 30(b)(6) Deposition of Rebecca Malamud, Public.Resource.C 11/13/14 (excerpts) ASTM-DKT-118-12, Ex. 04	Org, dated

Page 7 of 537

TABLE OF CONTENTS (Continued)

Document #1715850

Page	
Exh 6; Rule 30(b)(6) Deposition of National Fire Protection Association, Inc., dated 04/01/15 (excerpts) ASTM-DKT-118-12, Ex. 06	
Exh 7; Rule 30(b)(6) Deposition of ASTM Designee Stephanie Reiniche, dated 03/30/15 (excerpts) ASTM-DKT-118-12, Ex. 07	
Exh 10; Correspondence from U.S. Dept. of the Interior to Carl Malamud, dated 09/08/15 ASTM-DKT-118-12, Ex. 10	
Exh 12; dharlanuctcom 73 uploads ASTM-DKT-118-12, Ex. 12	
VOLUME II:	
Exh 16; Incorporation by Reference - ASTM Designation D 86-07 Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure ASTM-DKT-118-12, Ex. 16	
Exh 19; Email from Carl Malamud to Rebecca Malamud re: SVG and MathML (India and NFPA / Q4); dated 01/04/14 ASTM-DKT-118-12, Ex. 19	
Exh 23; NFPA NEC (20110 National Electrical Code (January 1, 2011) ASTM-DKT-118-12, Ex. 23	
Exh 25; ASHRAE Standard - Energy Standard for Buildings Except Low-Rise Residential Buildings ASTM-DKT-118-13, Ex. 25	
Exh 26; Incorporation by Reference - NFPA 70, NEC 2011 ASTM-DKT-118-13, Ex. 26	

	Page
Exh 27; Public Safety Standards United States (Federal Government) ASTM-DKT-118-13, Ex. 27	JA818
Exh 28; Public Safety Codes Incorporated by Law ASTM-DKT-118-13, Ex. 28	JA895
Exh 29; ASTM Designation D 86-07 Standard Test Method for Distillation Petroleum Products at Atmospheric Pressure ASTM-DKT-118-13, Ex. 29	
Exh 30; Project Update #8: A Prayer for Our Democracy ASTM-DKT-118-13, Ex. 30	JA930
Exh 31; Project Update #6: Meet the Code People ASTM-DKT-118-13, Ex. 31	JA934
Exh 32: Twelve Tables of Codes ASTM-DKT-118-13, Ex. 32	JA942
Exh 33: Email from Carl Malamud to Josh Greenberg re: Federal Register, Federal Regulations, dated 08/24/11 ASTM-DKT-118-13, Ex. 33	
Exh 34: Email from Carl Malamud re: suit; dated 08/09/13 ASTM-DKT-118-13, Ex. 34	JA972
Exh 38; downloads identifier chart ASTM-DKT-118-14, Ex. 38	JA974
Exh 39: Search Results - NFPA AND collection: additional collections ASTM-DKT-118-14, Ex. 39	JA988
Exh 44; ASTM D975 Standard Specification for Diesel Fuel Oils (2007 ASTM-DKT-118-16, Ex. 44	JA996
Exh 4; Rule 30(b)(6) Deposition of Donald P. Bliss, dated 03/03/15 (excer ASTM-DKT-120-06 (Material Under Seal)	pts) 1A999

Page
Exh 11; Rule 30(b)(6) Deposition of National Fire Protection Association, dated 03/31/15 (excerpts)
ASTM-DKT-120-07 (Material Under Seal)JA1019
Exh 22: Comments of ASTM International, dated 04/15/12 ASTM-DKT-120-09 (Material Under Seal)
Exh 74; Form for Comments on NFPA Report on Proposals ASTM-DKT-120-11 (Material Under Seal)
Exh 75; Form for Proposals on NFPA Technical Committee Documents ASTM-DKT-120-12 (Material Under Seal)
Exh 76; Form for Proposals on NFPA Technical Committee Documents ASTM-DKT-120-13 (Material Under Seal)
Exh 80; ASTM 2011 Membership Renewal Invoice ASTM-DKT-120-14 (Material Under Seal)
Exh 83; 2010 ASTM International Committee Membership Application ASTM-DKT-120-16 (Material Under Seal)
Exh 140; Correspondence from Jeff, to Jim; re: 2012 Accomplishments and 2013 Objectives ASTM-DKT-120-30 (Material Under Seal)JA1054
Exh 141; Email from John Pace to Jeff Groves re Standards Summaries, dated 07/09/12 ASTM-DKT-120-31 (Material Under Seal)
Exh 142; Email from John Pace to Jeff Groves re Standards Summaries, dated 07/10/12
ASTM-DKT-120-32 (Material Under Seal)JA1061
Exh 146; Email from James Thomas to Mary McKiel re: ANSI IPRPC: Malamud update 01/15 ASTM-DKT-120-33 (Material Under Seal) LA 1065

Page
Memorandum of Points & Authorities in Support of Public.Resource.Org's Motion for Summary Judgment and Opposition to Plaintiff's Motion for Summary Judgment and Permanent Injunction
ASTM-DKT-121-1JA1068
Declaration of Carl Malamud in Support of Public.Resource.Org's Motion for Summary Judgment
ASTM-DKT-121-5JA1070
Exh 2; Public Safety Standards, United States (Federal Government) ASTM-DKT-122-1, EXH 002
Exh 5; Rule 30(b)(6) Deposition of Steven Comstock, dated 03/05/15 (excerpts) ASTM-DKT-122-1, EXH 005
Exh 6; Rule 30(b)(6) Deposition of National Fire Protection Association, dated 04/01/15 (excerpts)
ASTM-DKT-122-1, EXH 006
Exh 8; Rule 30(b)(6) Deposition of American Standards Society for Testing and Materials, dated 03/04/15 (excerpts)
ASTM-DKT-122-1, EXH 008
Exh 9; Deposition of John C. Jarosz, dated 08/27/15 (excerpts) ASTM-DKT-122-1, EXH 009
Exh 12; Rule 30(b)(6) Deposition of American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., designee Stephanie Reiniche, dated 03/30/15 (excerpts)
ASTM-DKT-122-2, EXH 012
Exh 13; Rule 30(b)(6) Deposition of American Society for Testing and Materials, designee Daniel Smith, dated 07/24/15 (excerpts)
ASTM-DKT-122-2 EXH 013 JA1242

Page

VOLUME III:

Exh 14; Certificate of Registration, 1983 Book of ASTM Standards Section 3 Volume 03.01 Metals - Mechanical Testing; Elevated and Low Temperature Tests ASTM-DKT-122-2, EXH 014
Exh 15; Certificate of Registration, NFPA 1 Uniform Fire Code 2003 Edition ASTM-DKT-122-2, EXH 015
Exh 16; Certificate of Registration; 1993 ASHRAE Handbook Fundamentals, Inch-Pound Edition ASTM-DKT-122-2, EXH 016
Exh 23; Presentation - ASTM Standards, Regulations and Trade ASTM-DKT-122-3, EXH 023
Exh 24; Email from Sarah Petre to Jeff Grove, re: ASTM Follow Up on S1492, dated 10/04/12 ASTM-DKT-122-3, EXH 024
Exh 26; Incorporation by Reference Public Workshop ASTM-DKT-122-3, EXH 026
Exh 28; CM Submittal Form ASTM-DKT-122-3, EXH 028
Exh 44; Application for Project Committee Organizational Representative Membership ASTM-DKT-122-4, EXH 044
Exh 48; Application for Membership on ASHRAE Standard or Guideline Project Committee ASTM-DKT-122-4, EXH 048
Exh 49; Memorandum of Understanding Between The United States Dept. of Energy and The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASTM-DKT-122-4, EXH 049JA1543

Document #1715850

	Page
Exh 50: Marketing Task Group, TG Meeting Report, 06/26/04 ASTM-DKT-122-4, EXH 050	1547
Exh 51; Email from Steve Ferguson to Doug Read et al., re: IECC and 90.1, do 12/17/09	
ASTM-DKT-122-4, EXH 051	1563
Exh 52; ASHRAE Government Affairs: Technical Expertise to Policymakers ASTM-DKT-122-4, EXH 052	1566
Exh 73: Form for Comments on NFPA Report on Proposals 2000 November Association Technical Meeting	
ASTM-DKT-122-5, EXH 073	1599
Exh 77: Intellectual Property Policy of ASTM, Introduction ASTM-DKT-122-5, EXH 077	1602
Exh 78: Intellectual Property Policy of ASTM International ("Policy") ASTM-DKT-122-5, EXH 078	1611
Exh 79: Intellectual Property Policy of ASTM International ("Policy") ASTM-DKT-122-5, EXH 079	1616
Exh 95: How To: Standards Writing 101, New Standards ASTM-DKT-122-6, EXH 095	1623
Exh 96: Expert Report of James R. Fruchterman ASTM-DKT-122-6, EXH 096	1628
Exh 97; ASTM Editions Incorporated by Reference ASTM-DKT-122-6, EXH 097	1689
Exh 98; NFPA Editions Incorporated by Reference ASTM-DKT-122-6, EXH 098	1720
Exh 99; ASHRAE Editions Incorporated by Reference ASTM-DKT-122-6, EXH 099	1723

Pag	zе
Exh 104; Capitol Hill Event to Feature Policy and Business Leader Insights on Voluntary Standards and Conformance ASTM-DKT-122-7, EXH 104	25
Exh 106: ASTM International, Public Policy & Corporate Outreach ASTM-DKT-122-7, EXH 106	28
Exh 123; NFPA 70 National Electrical Code, 2011 Edition, Errata No. 70-11-1 ASTM-DKT-122-8, EXH 123	54
Exh 124; NFPA 70 National Electrical Code, 2011 Edition, Errata No. 70-11-2 ASTM-DKT-122-8, EXH 124	57
Exh 125; An Introduction to the NFPA Standards Development Process ASTM-DKT-122-8, EXH 125	5 9
VOLUME IV:	
Exh 126: ASHRAE Standards Committee; Procedures for ASHRAE Standards Actions PASA	
ASTM-DKT-122-8, EXH 126JA178	30
Exh 127; Form for Proposals for 2011 National Electrical Code ASTM-DKT-122-8, EXH 127	20
Exh 128; Form for Proposals for 2008 National Electrical Code ASTM-DKT-122-8, EXH 128	22
Exh 129; Form for Proposals for 2011 National Electrical Code ASTM-DKT-122-8, EXH 129 (Material Under Seal)	24
Exh 130; Email from John Pace to Kathe Hooper re: Question related to copyright dated 03/24/09	t,
ASTM-DKT-122-8, EXH 130	33

	Page
Exh 131; Email from Kathe Hooper to Victor Palacios re: Request (nao), d 07/09/09	ated
ASTM-DKT-122-8, EXH 131	.JA1838
Exh 132; ASTM International, Register My Account ASTM-DKT-122-8, EXH 132	. JA1843
Exh 133; ASTM International, Checkout - Your Address ASTM-DKT-122-8, EXH 133	. JA1845
Exh 134; ASTM International, Reading Room ASTM-DKT-122-8, EXH 134	. JA1847
Exh 135; "The purpose of this site" ASTM-DKT-122-8, EXH 135	. JA1849
Exh 136; ASTM International, ASTM License Agreement ASTM-DKT-122-8, EXH 136	. JA1852
Exh 137: "Please indicate your acceptance" ASTM-DKT-122-8, EXH 137	. JA1854
Exh 138; NFPA.Org/Login National Fire Protection Association web page ASTM-DKT-122-8, EXH 138	
Exh 139; ASHRAE Shaping Tomorrow's Built Environment Today ASTM-DKT-122-8, EXH 139	. JA1859
Exh 143: ASTM License Agreement (Reading Room) ASTM-DKT-122-9, EXH 143	. JA1861
Exh 154; NFPA Standards Development Site; Public Comment Stage ASTM-DKT-122-9, EXH 154	. JA1864
Exh 155; National Archives, Incorporation by Reference ASTM-DKT-122-9 EXH 155	IA1877

Page
Exh 1; Deposition of John C. Jarosz, dated 08/27/15 (excerpts) ASTM-DKT-124-3
Exh 3; Be confident your electrical work complies with California law (Gmail) ASTM-DKT-124-5JA1930
Plaintiff's Opposition to Defendant's Motion for Summary Judgment and Reply Memorandum of Law in Support of their Motion for Summary Judgment and for a Permanent Injunction
ASTM-DKT-155
Declaration of Steve Comstock ASTM-DKT-155-5JA1935
Declaration of Christian Dubay in Support of Plaintiffs' Motion for Summary Judgment
ASTM-DKT-155-6JA1940
Supplemental Declaration of Thomas B. O'Brien, Jr. ASTM-DKT-155-7
Exh 1; Deposition of James Fruchterman, dated 07/31/15 (excerpts) ASTM-DKT-155-8, Ex. 01
Exh 4; Rule 30(b)(6) Deposition of American Standards Society for Testing and Materials, by designee Jeffrey Grove, dated 03/04/15 (excerpts)
ASTM-DKT-155-8, Ex. 04
Exh 7; Rule 30(b)(6) Deposition of Steven Comstock, dated 03/05/15 (excerpts) ASTM-DKT-155-8, Ex. 07
Supplemental Declaration of Carl Malamud in Further Support of Defendant's Motion for Summary Judgment
ASTM-DKT-164-8JA2005
Exh 1; Executive Office of the President, Office of Management and Budget, OMB Circular A-119
ASTM-DKT-169-1 IA2007

Page
Order re: Motion to Strike Expert Report of John C. Jarosz ASTM-DKT-172 JA2051
Transcript of Motions Hearing before the Honorable Tanya S. Chutkan, dated 09/12/16
ASTM-DKT-173
Memorandum Opinion, Dated 02/02/17 ASTM-DKT-175 JA2059
Order ASTM-DKT-176
Notice of Appeal by Defendant-Counterclaimant Public.Resource.Org, Inc., dated 02/15/17
ASTM-DKT-177
Amended Order ASTM-DKT-182 JA2118
Amended Notice of Appeal by Defendant-Counterclaimant Public.Resource.Org, Inc.
ASTM-DKT-183
AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, INC. ET AL. V. PUBLIC.RESOURCE.ORG, INC.
(VOLUME IV – CONTINUED)
U.S. District Court for the District of Columbia Docket Sheet, AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, INC. et al. v. PUBLIC.RESOURCE.ORG, INC.
AERA-DKT-000 DOCKET

Filed: 01/31/2018

	Page
Complaint, AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, IN al. v. PUBLIC.RESOURCE.ORG, INC.	C. et
AERA-DKT-001JA	2158
Plaintiff's Reply and Affirmative Defenses AERA-DKT-014	2186
MPA in Support of Plaintiff's Motion for Summary Judgment AERA-DKT-060-01	2211
Plaintiff's Statement of Material Facts in Support of Motion for Summary Judgment AERA-DKT-060-02	2215
Exh T; Public.Resource.Org, Inc.'s Amended Responses to First Set of Interrogatories (Nos. 1-8)	2213
AERA-DKT-060-23	2217
Exh V-1; Standards for Educational and Psychological Testing AERA-DKT-060-25	2233
VOLUME V:	
Exh V-2; 9. Testing Individuals of Diverse Linguistic Backgrounds AERA-DKT-060-26	2333
Exh Z; Deposition of James R. Fruchterman, 09/08/15, (excerpts) AERA-DKT-060-30	2436
Exh II; archive-ssh-80x24 screen capture image AERA-DKT-060-44	2458
Exh JJ; Email dated 12/16/13 from John S. Neikirk to Carl Malamud AERA-DKT-060-45	2460

	Page
Exh KK; 12/19/13 Correspondence to John Neikirk from Carl Malamud AERA-DKT-060-46	. JA2462
Exh MM: Memorandum dated 06/12/14 AERA-DKT-060-48	. JA2465
Declaration of Marianne Ernesto in Support of Plaintiff's Motion for Summ Judgment	•
AERA-DKT-060-49	. JA2467
Exh VV; Correspondence from AERA, Am. Psychological Assoc., NCME 04/21/14; executed 04/24/14	dated
AERA-DKT-060-58	. JA2477
Exh WW; Correspondence from AERA, Am. Psychological Assoc., NCMI 04/21/14; executed 09/10/14	E dated
AERA-DKT-060-59	. JA2480
Exh XX; Correspondence from AERA, Am. Psychological Assoc., NCME 04/21/14; executed 09/08/14	dated
AERA-DKT-060-60	. JA2483
Exh YY; Correspondence from AERA, Am. Psychological Assoc., NCME 04/21/14; executed 04/21/14	dated
AERA-DKT-060-61	. JA2486
Exh ZZ; Correspondence from AERA, Am. Psychological Assoc., NCME 04/21/14; executed 04/21/14	dated
AERA-DKT-060-62	. JA2488
Exh AAA; Correspondence from AERA, Am. Psychological Assoc., NCM 04/21/14; executed 04/22/14	E dated
AERA-DKT-060-63	.JA2491
Exh BBB: Correspondence from AERA, Am. Psychological Assoc., NCMI 04/21/14; executed 04/21/14	
AFRA-DKT-060-64	IA 2496

Page
Exh CCC: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 10/16/14
AERA-DKT-060-65
Exh DDD: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/28/14
AERA-DKT-060-66
Exh EEE: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 09/08/14
AERA-DKT-060-67
Exh FFF: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 10/21/14
AERA-DKT-060-68
Exh GGG: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/23/14
AERA-DKT-060-69
Exh HHH: Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/24/14
AERA-DKT-060-70
Declaration of Lauress L. Wise in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-060-73
Declaration of Wayne Camara in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-060-76
Exh MMM; Email from John S. Neikirk to Wayne Camara re: Existing Standards, dated 02/14/14
AEPA DKT 060 77 IA2576

Page
Declaration of Felice J. Levine in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-060-78
Exh QQQ: Standards for Educational & Psychological Testing AERA-DKT-060-82
Exh RRR; Copyright registration for "Standards for Educational and Psychological Testing"
AERA-DKT-060-83
Exh SSS; Certificate of Registration for "Standards for Educational and Psychological Testing"
AERA-DKT-060-84
Exh TTT-1; "Standards for Educational and Psychological Testing" AERA-DKT-060-85
Declaration of Kurt F. Geisenger in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-060-88
Public Resource's Motion to Strike Declaration of Kurt F. Geisenger in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-067JA2744
Memorandum of Points and Authorities in Support of Public Resource's Motion to Strike Declaration of Kurt F. Geisenger in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-067-01(Material Under Seal)JA2746
Declaration of Matthew Becker in Support of Public Resource's Motion to Strike Declaration of Kurt F. Geisenger in Support of Plaintiff's Motion for Summary Judgment
AERA-DKT-067-02 (Material Under Seal)JA2769
Exh 1; Deposition of Kurt P. Geisinger, dated 09/10/15 (excerpts) AERA-DKT-067-03 (Material Under Seal)

Page
Exh 2; Deposition of Felice J. Levine, dated 05/04/15 (excerpts) AERA-DKT-067-04 (Material Under Seal)
Exh 3; Expert's Declaration and Report of Kurt F. Geisinger, dated 06/10/15 AERA-DKT-067-05
Exh 4; Geisinger Expert Report - List of Materials Considered AERA-DKT-067-06
Exh 5; "Standards for Educational and Psychological Testing" Sales Report, 1999
Edition AERA-DKT-067-07
Exh 6; AERA Standards for Educational and Psychological Testing Statement of Revenue and Expenses; (FY2000 - 12/31/14)
AERA-DKT-067-08 (Material Under Seal)JA2834
Exh 7; Standards for Educational and Psychological Testing (Fund Balance
Report) AERA-DKT-067-09 (Material Under Seal)JA2836
Exh 8; American Psychological Association - APA Membership Statistics AERA-DKT-067-10
Exh 9; Standards for Educational & Psychological Testing (2014 Edition) AERA-DKT-067-11
"Exh 10; Briefing Room - Remarks by the President in State of the Union Address" AERA-DKT-067-12
Exh 11; Everything You Need to Know: Waivers, Flexibility, and Reforming No Child Left Behind
AERA-DKT-067-13
Exh 12; National resolution against high-stakes tests released AERA-DKT-067-14JA2876

Page
VOLUME VI:
Exh 13; FairTest - Resistance to High Stakes Testing Spreads AERA-DKT-067-15
Exh 14; California Intellectual Property Laws, 2015 Edition; Publisher: Matthew Bender
AERA-DKT-067-16
Exh 15; Amazon - Code of Federal Regulations, Title 38, Pensions, Bonuses, and Veterans' Relief, Pt. 0-17, Revised as of July 1, 2015
AERA-DKT-067-17
Exh 16; Barnes & Noble Classics - web search results AERA-DKT-067-18
Exh 2; Rule 30(b)(6) Deposition of Dianne L. Schneider, dated 04/23/15 (excerpts) AERA-DKT-068-06 (Material Under Seal)
Exh 3; Rule 30(b)(6) Deposition of AERA, APA, NCME, representative Marianne Ernesto, dated 04/29/15 (excerpts)
AERA-DKT-068-07 (Material Under Seal)JA2903
Exh 5; Deposition of Felice J. Levine, dated 05/04/15 (excerpts) AERA-DKT-068-09 (Material Under Seal)
Exh 6; Deposition of Lauress L. Wise; dated 05/11/15 (excerpts) AERA-DKT-068-10 (Material Under Seal)
Exh 8; Deposition of Kurt F. Geisinger, dated 09/10/15 (excerpts) AERA-DKT-068-11 (Material Under Seal)
Exh 11; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/24/14
AERA-DKT-068-12 (Material Under Seal)JA2990

Page
Exh 13; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 09/10/14
AERA-DKT-068-14 (Material Under Seal)JA2993
Exh 14; Copyright Assignment, from Leonard S. Feldt, to AERA, APA, NCME, dated 12/12/14
AERA-DKT-068-15 (Material Under Seal)JA2996
Exh 15; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 09/08/14
AERA-DKT-068-16 (Material Under Seal)JA3001
Exh 17; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/21/14
AERA-DKT-068-17 (Material Under Seal)JA3004
Exh 18; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/22/14
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Exh 21; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/28/14
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Exh 22; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 09/08/14
AERA-DKT-068-22 (Material Under Seal)JA3022

Page
Exh 23; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 10/21/14
AERA-DKT-068-23 (Material Under Seal)JA3025
Exh 24; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/23/14
AERA-DKT-068-24 (Material Under Seal)JA3028
Exh 25; Correspondence from AERA, Am. Psychological Assoc., NCME dated 04/21/14; executed 04/24/14
AERA-DKT-068-25 (Material Under Seal)JA3031
Exh 26; Copyright Assignment, from Charlie Spielberger to AERA, APA, NCME dated 12/30/14
AERA-DKT-068-26 (Material Under Seal)JA3034
Exh 28; Copyright Certificate of Registration - Standards for Educational and Psychological Testing, dated 02/25/14
AERA-DKT-068-28 (Material Under Seal)JA3038
Exh 29; Standards for Educational and Psychological Testing AERA-DKT-068-29 (Material Under Seal)
Exh 30; APA - Professional Standards to Ensure the Fair and Appropriate Use of
Testing in High-Stakes Educational Decisions AERA-DKT-068-30 (Material Under Seal)
Exh 32; Highlights of APA's Involvement in Educational Testing Provisions of the "No Child Left Behind Act"
AERA-DKT-068-31 (Material Under Seal)JA3054
Exh 33; Correspondence to Elliott Eisner and Ronald A. Berk from Frank Farley, APA, dated 01/05/93
AERA-DKT-068-32 (Material Under Seal)JA3058
"Exh 38; American Educational Research Association Standards of Educational and Psychological Testing Statement of Revenue and Expenses (FY2000 -

Pa	age
12/31/2013)" AERA-DKT-068-34 (Material Under Seal))63
"Exh 41; American Educational Research Association Standards of Educational and Psychological Testing Statement of Revenue and Expenses (FY2000 - 12/31/2014)"	
AERA-DKT-068-35 (Material Under Seal)JA30)65
Declaration of Carl Malamud in Support of Public.Resource.Org's Motion for Summary Judgment, dated 01/21/16	
AERA-DKT-069-05)67
Exh 10; Copyright Registration - Standards for Educational and Psychological Testing, dated 12/08/99	
AERA-DKT-070-10)78
Exh 39; Standards for Educational and Psychological Testing Sales Report, 1999 Edition)
AERA-DKT-070-38)81
Exh 40; Standards for Educational and Psychological Testing Sales Report AERA-DKT-070-39)83
Exh 44; Monitor on Psychology - advertisement for Standards for Educational ar Psychological Testing	
AERA-DKT-070-43)85
Exh 45; Table of Contents - Standards for Educational and Psychological Testing AERA-DKT-070-44	_
Exh 46; New! Revised! Expanded! Standards for Educational and Psychological AERA-DKT-070-45	
Exh 47; AERA web listing - Standards for Educational & Psychologic (2014 Edition)	
AERA-DKT-070-46	102

Page
Exh 48; AERA web listing - Standards for Educational & Psychologic (2014 Edition)
AERA-DKT-070-47
Exh 51; Expert Report of James R. Fruchterman, dated 06/13/15 AERA-DKT-070-50
Exh 52; SIOP article - OCR Issues Draft Guide on Disparate Impact in Educational Testing, Wayne Camara, The College Board
AERA-DKT-070-51
Exh 65; National Archives - Incorporation by Reference AERA-DKT-070-64
Plaintiff's Reply in Further Support of its Motion for Summary Judgement and in Opposition to Defendant's Motion for Summary Judgment, dated 02/18/16 AERA-DKT-089
Exh 83; Report of the Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities, 12/06/11 AERA-DKT-099-13
Order, re: Defendant's Motion to Strike the Geisinger Declaration AERA-DKT-115
Transcript of Motions Hearing before the Honorable Tanya S. Chutkan, dated 09/12/16
AERA-DKT-116JA3259
Memorandum Opinion, Dated 02/02/17 AERA-DKT-117JA3401
Order, Dated 02/02/17 AERA-DKT-118
Plaintiff's Motion for Clarification of the Court's Order dated February 2, 2017, dated 02/10/17
AERA-DKT-119JA3457

	Page
Notice of Appeal by Defendant-Counterclaimant Public.Resource 02/17/17	e.Org, Inc., dated
AERA-DKT-120	JA3461

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By: /s/ Andrew P. Bridges

Andrew P. Bridges (admitted) abridges@fenwick.com Matthew B. Becker (admitted) mbecker@fenwick.com FENWICK & WEST LLP 555 California Street, 12th Floor San Francisco, CA 94104 Telephone: (415) 875-2300

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 63 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 29 of 537

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 64 of 369

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 66 of 369

US	Case #17-7039 Document #1715850	2-2 Filed 12/22/13 <u>Filed: 01/31</u>	2018——Page 33 of	537
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 68 of 369

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JSCA Case TESCOMPRICE LIND CERTIFICATE: OF COPYRIGHT: REGISTRATION: 2 Filed 12/22/15 Page 70 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/34/2018 A Ragie 36 FORM SE This certificate, issued under the seal of the Copyright UNITED STATES COPYRIGHT OFFICE Office in accordance with the provisions of section 410(a) REGISTRATION NUMBER of title 17, United States Code, attests that copyright registration has been made for the work identified below. The information in this certificate has been made a part of the Copyright Office records. ŢY 1-374-250 (10 PARY OF CO EFFECTIVE DATE OF REGISTRATION TEMBL' REGISTER OF COPYRIGHTS OFFICIAL SEAL United States of America DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET. TITLE OF THIS SERIAL 🛡 1984 Annual Book of ASTM Standards Section 11 Volume 11.01 Water (I) Volume 🔻 Number 🔻 Date on Copies T Frequency of Publication Section 11 Volume 11.01 May Annual PREVIOUS OR ALTERNATIVE TITLES \ NAME OF AUTHOR ♥ DATES OF BIRTH AND DEATH Year Died ▼ Year Born V American Society for Testing and Materials AUTHOR'S NATIONALITY OR DOMICILE Name of Country WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Was this contribution to the work a If the answer to some of these questions is "work made for hire"? 🗌 Yes 🔲 No Anonymous? U.S.A Yes," see detailed C No Pseudonymous? ☐ Yes ☐ No เอราณตรอกร NOTE NATURE OF AUTHORSHIP Striefly describe nature of the material created by this author in which copyright is claimed. ▼ Under the law, the 'author' of a ☐ Collective Work Other: Entire Text work made for NAME OF AUTHOR V DATES OF BIRTH AND DEATH Year Born ▼ Year Died hire" is generally the employer. not the employee (see in structions). For AUTHOR'S NATIONALITY OR DOMICILE WAS THIS AUTHOR'S CONTRIBUTION TO Was this contribution to the work a any part of this THE WORK If the answer to either "work made for hire"? work that was "made for hire" check "Yee" in ☐ Yes ☐ Yes ☐ No Citizen of Anonymous? of these questions is Of { Domiciled in ▶..... "Yee," see detailed instructions. □ No Pseudonymous? ☐ Yes ☐ No the space pro-NATURE OF AUTHORSHIP Briefly describe nature of the material created by this author in which copyright is claimed. vided, give the emplover (or ☐ Collective Work other person for whom the work NAME OF AUTHOR ▼ DATES OF BIRTH AND DEATH was prepared) as "Author" of that part, and leave the space for dates of birth AUTHOR'S NATIONALITY OR DOMICILE WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Was this contribution to the work a and death blank. "work made for hire"? If the answer to either On { Citizen of >.......
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page Filed: 01/31/2018 Filed: 0	FORM SE
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Case 1:13-cv-01215-TSC Document 122-2 Fited 12/22/15 CERTURICATE OF COPYRIGHT REGISTRATION Filed: 01/31/2

Page 88 of 369

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 91 of 369 Document #1715850 01/31/2018 **FORM SE** 43 X 3 043-643 CORRESPONDENCE COPYRIGHT OFFICE USE DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET. PREVIOUS REGISTRATION Has registration for this issue, or for an earlier version of this particular issue, already been made in the Copyright Office? 🛪 Yes 🗆 No - If your answer is "Yes." why is another registration being sought? (Check appropriate box) 🔻 a. [3] This is the first published version of an issue previously registered in unpublished form. b. (1) This is the first application submitted by this author as copyright clannant. c. [] This is a changed version of this issue, as shown by space 6 on this application, Year of Registration ▼ 1990 If your answer is "Yes." give: Previous Registration Number ▼ DERIVATIVE WORK OR COMPILATION Complete both space 6a & 6b for a derivative work; complete only 6b for a compilation. Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. 1990 Annual Book of ASTH Standards, Section 0/ Volume 0/.0/ Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. helpie combietina Compilation of previous published text plus additional text. 10h144 -space deleted-REPRODUCTION FOR USE OF BLIND OR PHYSICALLY HANDICAPPED INDIVIDUALS A signature on this form at space 10, and a check in one of the boxes here in space 8, constitutes a non-exclusive grant of permission to the Library of Congress to reproduce and distribute solely for the bind and physically handicapped and under the conditions and limitations prescribed by the regulations of the Copyright Office: (1) copies of the work identified in space 1 of this application in Braille (or similar tactile symbols); or (2) phonorecords embodying a fixation of a reading of that work; or (3) both ▲ Copies and Phonorecords b [] Copies Only .አዮሎ ማኝ:ጤት የፈትላኝ DEPOSIT ACCOUNT If the registration tee is to be charged to a Deposit Account established in the Copyright Office, give name and inumber of Account Account Number V CORRESPONDENCE Give status and address to which correspondence about this application should be sent. I frame: Authorise Cay State: East 9 Robert L. Meltzer, ASTM 1916 Race Street By sure to give your dayline phone 19103-1187 Area Code & TateChloria Riumber F 215--299--5431 Philadelphia, PA **REPORTED AT** 🛄 ambige CERTIFICATION* I, the undersigned, hereby certify that I am the (i) other copyright claimant Check one is Conner of codesive rights) American Society of the work identified in this application and that the statements made Grauthurized agent of for Testing and Materials

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 92 of 369 Filed: 01/3NORM Stage 58 of 537 CERTIFICATE OF COFYRIGHT REGISTRATION

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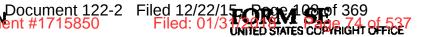
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15, Page 120 of 369 Filed: 01/F/DRIM Stage 86 of 537 CERTHECATESOFTREGISTRATION Pot #1715850

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connection with the application, shall be fined not more than \$2,500

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 122 of 369. Filed: 01/20/15 Page 88 of 537 UNITED STATES COPYRIGHT OFFICE CERTIFICATE OF REGISTRAPION ent #1715850

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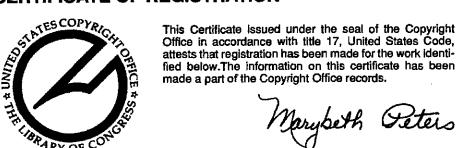
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 137 of 369 Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 103

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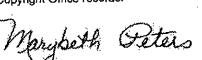
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 150 of 369



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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 152 of 369 CERTIFICATE OF REGISTRATION #1715850 Filed: 01/31/2018 Page 118 of 537





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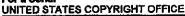


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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 165 of 369 Document #1715850 EXAMINED BY FORM SE CHECKED BY **FOR** COPYRIGHT CORRESPONDENCE **OFFICE** USE ONLY DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET. PREVIOUS REGISTRATION Has registration for this issue, or for an earlier version of this particular issue, already been made in the Copyright Office? If your answer is "Yes," why is another registration being sought? (Check appropriate box) This is the first published version of an issue previously registered in unpublished form. This is the first application submitted by this author as copyright claimant. This is a changed version of this issue, as shown by space 6 on this application. If your answer is "Yes," give: Previous Registration Number ▼ DERIVATIVE WORK OR COMPILATION Complete both space 6a & 6b for a derivative work; complete only 6b for a compilation. a. Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. 1998 Annual Book of ASTM Standards, Section 06, Volume 06.01 See instructions b. Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. this space Compilation of previous published text plus additional text. ---space deleted---REPRODUCTION FOR USE OF BLIND OR PHYSICALLY HANDICAPPED INDIVIDUALS A signature on this form at space 10, and a check in one of the boxes here in space 8, constitutes a non-exclusive grant of permission to the Library of Congress to reproduce and distribute solely for the blind and physically bandicapped and under the conditions and limitations prescribed by the regulations of the Copyright Office: (1) copies of the work identified in space 1 of this application in Braille (or similar tactile symbols); or (2) phonorecords embodying a fixation of a reading of that work; or (3) both. c Phonorecords Only Copies and Phonorecords b Copies Only DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account. Account Number Name V DA078328 American Society for Testing and Materials Name/Address/Apt/City/State/ZiP ▼ CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Kathe Hooper, American Society for Testing and Materials 100 Barr Harbor Drive Re sure to give your daytime pl West Conshohocken, PA 19428-2959 Area Code & Telephone Number In (610) 832-9634 CERTIFICATION. I, the undersigned, hereby certify that I am the author other copyright claimant Check only one 1 owner of exclusive right(s) of the work identified in this application and that the statements made authorized agent of American Society for Testing & Materials
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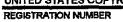
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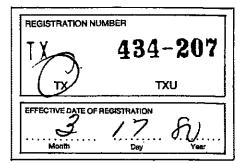
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4	
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American Society for Testing and Materials 1916 Race Street

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□ author □ other copyright claimant □ owner of exclusive right(s) 🗘 authorize	ed agent of: Materi.	als or or other copyright claiment, or owner of exclusive right(s))	10	
of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.				
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Case 1:13-cv-01215-TSC Document 122-CERTUSICATE OF CORYR, DITURE GISTRICHION

SC_Document 122-2 Filed 12/22/15 Page 172 of 369 Filed: 01/31/2018 Page F39 RMs7 TX

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TX.	464-573
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□ author □ other copyright claimant □ owner of exclusive right(s) □ authoria	(Name of autr	or or other copyright chilinant, or owner or exclusive right(s))		
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v-01215-TSC Document 122-2 Filed 12/22/15 Page 174 of 369

RYR DUCLREGISTRACION Filed: 01/31/2018 Page FORM

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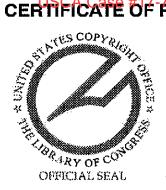
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/23/15 Page 176 of 369 Filed: 01-34-21-9 Page 142 of 5 CERTIFICATE OF REGISTRATION

UNITED STATES COPYRIGHT OFFICE

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Name of Country WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK Was this contribution to the work a If the answer to either

Yes No of these questions is
Yes No instructions Citizen of ▶ "work made for hire"? Yes Anonymous? Domiciled in United States □ No Paeudonymous? NATURE OF AUTHORSHIP Briefly describe nature of the material created by this author in which copyright is claimed. Other: Entire Text Collective Work DATES OF BIRTH AND DEATH NAME OF AUTHOR ¥ hirs" is generally the employer, not the em-ployee (see in-structions). For any part of this Year Died ▼ Year Born♥ WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK If the answer to e AUTHOR'S NATIONALITY OR DOMICILE Name of Country Was this contribution to the work a if the answer to either
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Yes No instructions. work made for hire"? work that was "made for hire" check "Yes" in Citizen of Anonymous? Yes Domiciled in No Pseudonymous? NATURE OF AUTHORSHIP Briefly describe nature of the material created by this author in which copyright is claimed. me space pro-vided, give the employer (or other person for whom the work Collective Work Other: NAME OF AUTHOR ▼ DATES OF BIRTH AND DEATH
Year Born▼ Year Die Year Died that part, and ve the space dates of birth I death blank AUTHOR'S NATIONALITY OR DOMICILE WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK If the Enswer to 0 Was this contribution to the work a If the answer to either

Yes No of these questions is "Yes," see detailed

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Domiciled in ▶ "work made for hire"? Anonymous? ∐ No Pseudonymous? NATURE OF AUTHORSHIP Briefly describe nature of the material created by this author in which copyright is claimed ▼ Other: Collective Work DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR ISSUE

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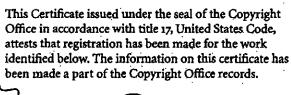
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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 206 of 369 Certificate of Registration Document #1715850 Filed: 01/31/2018 Page 172 of 53

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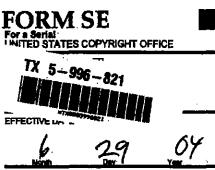
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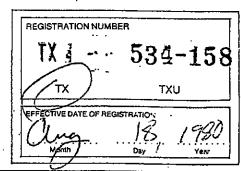
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* 17 U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than \$2.500.

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REGISTER OF COPYRIGHTS United States of America

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(2)	IMPORTANT: Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). If any part of this work was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates blank.						
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^{₹ 17} U.S.C. § 506(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement filed in connection with the application, shall be fined not more than \$2,500.

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Danie L. Lade

REGISTER OF COPYRIGHTS United States of America

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 222 of 369 Certificate of Registration Filed: 01/31/2018 Page 188 of 537



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Registration Number TX 7-685-915

Effective date of registration:

March 5, 2013

Register of Copyrights, United States of America

Title -Title of Work: ASTM D975-07 Standards Specification for Diesel Fuel Oils Completion/Publication > Year of Completion: 2007 Date of 1st Publication: April 1, 2007 Nation of 1st Publication: United States Author • Author: ASTM International Author Created: Entire Text Work made for hire: Yes Domiciled in: United States Copyright claimant -Copyright Claimant: ASTM International 100 Barr Harbor Drive, West Conshohocken, PA, 19428, United States Limitation of copyright claim Material excluded from this claim: text Previous registration and year: TX 6-563-072 2007 TX 6-342-584 New material included in claim: text, editing Rights and Permissions Organization Name: ASTM International Name: Kathleen Hooper Telephone: Email: khooper@astm.org 610-832-9634 Address: 100 Barr Harbor Drive West Conshohocken, PA 19428 United States Certification

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 223 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 189 of 537

Name: Kathleen Hooper

Date: March 1, 2013



Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 224 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 190 of 537 Certificate of Registration



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Registration Number TX 7-685-927

Effective date of registration:

March 5, 2013

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Title Title of Work: ASTM C150-99a Standard Specification for Portland Cement Completion/Publication -Year of Completion: 1999 Date of 1st Publication: December 1, 1999 Nation of 1st Publication: United States Author Author: ASTM International Author Created: Entire Text Work made for hire: Yes Domiciled in: United States Copyright claimant --Copyright Claimant: ASTM International 100 Barr Harbor Drive, West Conshohocken, PA, 19428, United States Limitation of copyright claim Material excluded from this claim: text Previous registration and year: 1999 TX 4-787-636 1998 New material included in claim: text, editing **Rights and Permissions** Organization Name: ASTM International Name: Kathleen Hooper Email: khooper@astm.org Telephone: 610-832-9634 Address: 100 Barr Harbor Drive West Conshohocken, PA 19428 United States Certification

Page 1 of 2

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 225 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 191 of 537

Name: Kathleen Hooper
Date: March 1, 2013



Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 226 of 369 Celtificate of Registration Filed: 01/31/2018 Page 192 of 537



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Registration Number TX 7-685-938

Effective date of registration:

March 5, 2013

Register of Copyrights, United States of America

Title · Title of Work: ASTM A106/A106M-04b Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service Completion/Publication • Year of Completion: 2004 Date of 1st Publication: December 1, 2004 Nation of 1st Publication: United States Author • Author: ASTM International Author Created: Entire Text Work made for hire: Yes Domiciled in: United States Copyright claimant ---Copyright Claimant: ASTM International 100 Barr Harbor Drive, West Conshohocken, PA, 19428, United States Limitation of copyright claim Material excluded from this claim: text Previous registration and year: TX 5-914-334 2004 TX 5-665-928 2003 New material included in claim: text, editing Rights and Permissions Organization Name: ASTM International Name: Kathleen Hooper Email: khooper@astm.org Telephone: 610-832-9634 Address: 100 Barr Harbor Drive West Conshohocken, PA 19428 United States Certification

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Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 227 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 193 of 537

Name: Kathleen Hooper

Date: March 1, 2013



Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 228 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 194 of 537 Certificate of Registration



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Maria A Pallante

Register of Copyrights, United States of America

Registration Number TX 7-685-941

Effective date of registration:

March 5, 2013

-	: ASTM D86-07 Standards Test Methods for Distillation of Petroleum Products at Armospheric Pressure	í
Completion/Publication - Year of Completion:	2007	Þ
Date of 1st Publication:	March 1, 2007 Nation of 1st Publication: United States	
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	ASTM International	
Author Created:	Entire Text	
Work made for hire:	Yes	
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	TX 6-342-584 2006	
New material included in claim:	text, editing	
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Organization Name:		
	Kathleen Hooper	20.000
	khooper@astm.org Telephone: 610-83	32-9634
Address:	100 Barr Harbor Drive	
	West Conshohocken, PA 19428 United States	
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Page 1 of 2

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 229 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 195 of 537

Name: Kathleen Hooper

Date: March 1, 2013



Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 230 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 196 of 53 Certificate of Registration



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Maria & Pallante

Register of Copyrights, United States of America

Registration Number TX 7-763-690

Effective date of registration:

April 10, 2013

Title of Work: F1193 - 06 Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices Completion/Publication Year of Completion: 2006 Date of 1st Publication: March 3, 2006 Nation of 1st Publication: United States Author Author: ASTM International Author Created: Entire Text Work made for hire: Yes Domiciled in: United States Copyright claimant -Copyright Claimant: ASTM International 100 Barr Harbor Drive, West Conshohocken, PA, 19428, United States Limitation of copyright claim Material excluded from this claim: text Previous registration and year: TX 6-270-668 2005 TX 6-076-444 2004 New material included in claim: text, editing Rights and Permissions Organization Name: ASTM International Kathleen Hooper Email: khooper@astm.org Telephone: 610-832-9634 Address: 100 Barr Harbor Drive West Conshohocken, PA 19428 United States

Page 1 of 2

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 231 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 197 of 537

Name: Kathleen Hooper
Date: April 10, 2013



EXHIBIT 15

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 233 of 369 Certificate of #Registrationcument #1715850 Filed: 01/31/2018 Page 199 of 537



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SC Document 122-2 Filed 12/22/15 Page 257 of 369



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Acting Register of Copyrights, United States of America

Registration Number TX 7-297-325

> Effective date of registration:

December 13, 2010

Title •

Title of Work: National Electrical Code, 2011-Edition

Completion/Publication -

Year of Completion: 2010

Date of 1st Publication: August 25, 2010

Nation of 1st Publication: United States

Author

Author: NFPA

Author Created: text, photographs, compilation, editing, artwork

Work made for hire: Yes

> Citizen of: United States

Domiciled in: United States

Copyright claimant

Copyright Claimant: NFPA

One Batterymarch Park, Quincy, MA, 02169, United States

Previous registration and year: 6-966-113

2008

Rights and Permissions

Organization Name: NFPA

Address: One Batterymarch Park

Quincy, MA 02169 United States

Certification

Name: Nancy M. Zagrodny

Date: December 8, 2010

Case 1:13-cy-01215-TSC Document 122-2 Filed 12/22/15 Page 258 of 369 Cettsficatesef#Registratiogrument #1715850 Filed 01/31/2018 Page 224

For a Nondramatic Literary Work UNITED STATES COPYRIGHT OFFICE



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OCT 10 2003

Marybeth Geters

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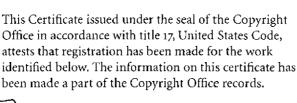
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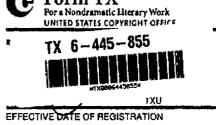
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Page 268 of 369 2018 Page 234 of 537 **Form TX** Case 1:13-cv-01215-TSC Document 122-2 Certsticatese#Registratioocument #1715850 Filed 12/22/15



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.



Marybeth Peters

EFFECTIVE DATE OF REGISTRATION				
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17 U.S.C. § 506(e): Any person who knowingly makes a late representation of a material fact in the application for copyright registration provided for by section 409, or in any written statement fixed in connection with the application, shall be fined not more than \$2.500.

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 270 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 236 of 537 Certificate of Registration



This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Register of Copyrights, United States of America

Marybeth Geters

Registration Number: TX 6-966-113

Effective date of registration:

December 3, 2007

Title

Title of Work: NFPA 70 National Electrical Code, 2008 Edition

Previous or Alternative Title: NFPA 70 National Electrical Code

Completion/Publication

Year of Completion: 2007

Date of 1st Publication: August 15, 2007

Author •

Author: National Fire Protection Association

Author Created: Entirety

Work made for hire: Yes

Citizen of: United States

Anonymous: No Pseudonymous: No

Copyright claimant

Copyright Claimant: National Fire Protection Assn.

One Batterymarch Park, Quincy, MA, 02169

Limitation of copyright claim -

Material excluded from this claim: Previously Published

Previously registered: Yes

Previous registration and year: TX 6-108-410 2005

New material included in claim: Some new and revised text

Certification

Name: Nancy Zagrodny

Date: November 29, 2007

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 271 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 237 of 537

Registration #: TX0006966113

Service Request #: 1-33580303

National Fire Protection Assn Nancy Zagrodny One Batterymarch Park Quincy, MA 02169

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 272 of 369 Certification #17/25/2019 Ation Filed: 01/31/2018 Page 238 of 537



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Registration Number TX 7-935-064

Effective date of registration:

July 25, 2014

Register of Copyrights, United States of America

Date: July 14, 2014

Title · Title of Work: National Electrical Code, 2014 Edition Completion/Publication -Year of Completion: 2013 Date of 1st Publication: November 1, 2013 Nation of 1st Publication: United States Author Author: NFPA Author Created: text, photographs, compilation, editing, artwork Work made for hire: Yes Citizen of: United States Copyright claimant -Copyright Claimant: NFPA One Batterymarch Park, Quincy, MA, 02169, United States Limitation of copyright claim Previous registration and year: 7-297-325 2011 Certification Name: Nancy M. Zagrodny

EXHIBIT 16

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This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Registration Number TX 7-299-602

Acting Register of Copyrights, United States of America

Effective date of registration: December 13, 2010

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MAR 0 7 2011

SPECIAL PUBS

Title

Title of Work: ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-

Rise Residential Buildings (IP)

Completion/Publication

Year of Completion:

Date of 1st Publication: November 23, 2010 Nation of 1st Publication: United States

International Standard Number: ISSN 1041-2336

Author

American Society of Heating Refrigerating and Air-Conditioning Engineers Author:

Inc., dba ASHRAE text, editing, Illustrations Author Created:

Work made for hire:

Citizen of: United States Domiciled in: United States

Copyright claimant

Copyright Claimant: American Society of Heating Refrigerating and Air-Conditioning Engineers

Inc., dba ASHRAE

1791 Tullië Circle, NE, Atlanta, GA, 30329-2305

Limitation of copyright claim

Material excluded from this claim: text, Illustrations

Previous registration and year: \TX 6-842-936 2008

> TX 6-091449 2004

New material included in claim: text, editing

Rights and Permissions

Organization Name: American Society of Heating Refrigerating and

Air-Conditioning Engineers Inc.

Name:

Email: scomstock@ashrae.org Telephone: 678-539-1102

Address: 1791 Tullie Circle, NE

Atlanta, GA 30329-2305

Page 1 of 2

Case 1:13-cv-01215-TSC Document 122-2 Filed 12/22/15 Page 277 of 369 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 243 of 537

Certification

Name: Michshell Phillips

Date: December 9, 2010

Applicant's Tracking Number: 0201796533357958



Page 2 of 2

Certificate of Registration



This Certificate issued under the seal of the Copyright Office in accordance with title 17. United States Code; attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Geters

Register of Copyrights, United States of America

RECEIVED

JUN 1 8 2008

SPECIAL PUBS

Registration Number:

TX-6-842-936

Effective date of registration:

Rebruary 29, 2008

Title

Title of Work: ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings Except

Low-Rise Residential Buildings (I-P)

Previous or Alternative Title: ANSI/ASHRAP/IESNA Standard 90.1-2004, Energy Standard for Buildings

Except Low-Rise Residential Buildings (I-P)

Completion/Publication

Year of Completion: 2008

Date of 1st Publication: January 9, 2008 Nation of 1st Publication: United States

Author

Author: American Society of Heating, Refrigerating & Air-Conditioning Engrs

Author Created: Text and illustrations.

Work made for hire: Yes

Domiciled in: (United States)

Copyright claimant

Copyright Claimant: American Society of Heating, Refrigerating & Air-Conditioning Engrs

1791 Tullie Circle, NE, Atlanta, GA, 30329-2305

Limitation of copyright claim

Material excluded from this claim: Derivative work, previously published material,

Previously registered: > Yes

Previous registration and year: TX 6-091-449 2004

Basis of current registration. This is a changed version of the work.

New material included in claim: Editorial revisions and additional material

Certification

Certificate of Registration



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

Marybeth Peters

Register of Copyrights, United States of America

C For	Orm TX a Nondramatic Literary V	Work OFFICE
TX	6 – 091 – 449	MA .
	DATE OF REGISTRATI	
Month	Day	Year

	Register of Cop	yrights, United States of America	Month Day Year	
	DO NOT WRITE ABOVE THIS L	INE. IF YOU NEED MORE SPACE, USE A SEPARA	TE CONTINUATION SHEET.	
	TITLE OF THIS WORK ▼ ANSI/ASHRAE/IESNA Standard 90 1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings (1-P Edition) PREVIOUS OR ALTERNATIVE TITLES ▼ ANSI/ASHRAE/IESNA Standard 90 1-2001, Energy Standard for Buildings Except Low-Rise Residential Buildings			
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2 a	NAME OF AUTHOR ▼ American Society of Heating	g, Refrigerating & Air-Conditioning Engra	DATES OF BIRTH AND DEATH Year Born ▼ Year Died ▼	
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the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the apace for dates of birth and death blank	NAME OF AUTHOR ▼		DATES OF BIRTH AND DEATH Year Born ♥ Year Died ♥	
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Filed 12/22/15 Page 281 of 369 Filed: 01/31/2018 Page 247 Case 1:13-cv-01215-TSC Document 122-2 Page 247 of 537 EXAMINED BY FORM TX RECEIVED CHECKED BY FEB. 2 5 2005 FOR CORRESPONDENCE COPYRIGHT SPECIAL PUBS Yes OFFICE USE ONLY DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office? Wes No If your answer is Yes," why is another registration being sought? (Check appropriate box) ▼ a [] This is the first published edition of a work previously registered in unpublished form b [] Thus is the first application submitted by this author as copyright claimant c By Thus is a changed version of the work, as shown by space 6 on this application If your answer is "Yes, give Provious Registration Number > TX 5-662-106 Year of Registration > 200 DERIVATIVE WORK OR COMPILATION Preexisting Material Identify any preexisting work or works that this work is based on or incorporates Derivative Work Previously published material Material Added to This Work. Give a brief, general statement of the material that has been added to this work and in which copyright is claimed.

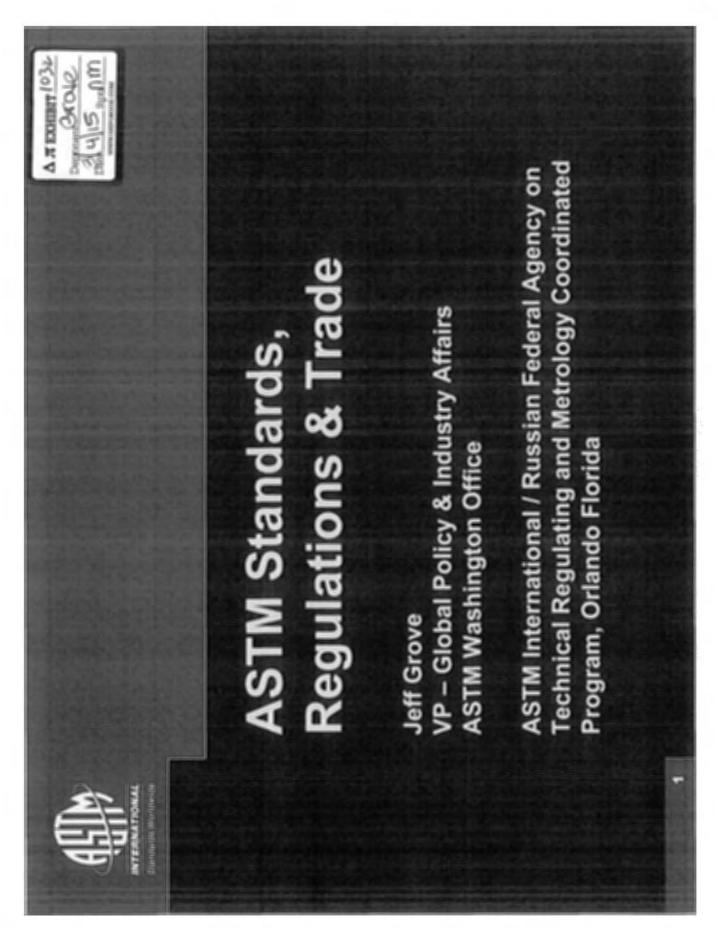
The statement of the material that has been added to this work and in which copyright is claimed. Editorial revisions and additional material DEPOSIT ACCOUNT If the regustration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account Account Number ASHRAE DA 019739 CORRESPONDENCE Give name and address to which correspondence about this application should be sent Name/Address/Apt/City/State/ZIP V ASHRAE, ATTN Mildred Geshwiler 1791 Tullie Circle, NE Atlanta, GA 30329-2305 Area code and daytime telephone number > (678) 539-1154 Fax number ▶ (678) 539-2191 mgeshwiler@ashrae org Tauthor CERTIFICATION. * I, the undersigned, hereby certify that I am the other copyright claimant Cowner of exclusive right(s) ASHRAE of the work identified in this application and that the statements made authorized agent of .. by me in this application are correct to the best of my knowledge Name of author or other copyright clamant, or owner of exclusive right(e) A Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date Mildred Geshwiler Date December 28, 2004 Certificate will be mailed in ASHRAE, ATTN MILDRED GESHWILER window Number/StreeVApt V envelope 1791 TULLIE CIRCLE, NE to this address Chy/Stule/ZIP ¥ ATLANTA, GA 30329-2305 101 Independence Avenue 5 Washington D.C. 20559-6222 intation of a material fact in the application for copyright registration provided by by section 409 or in any written statement filled in conne

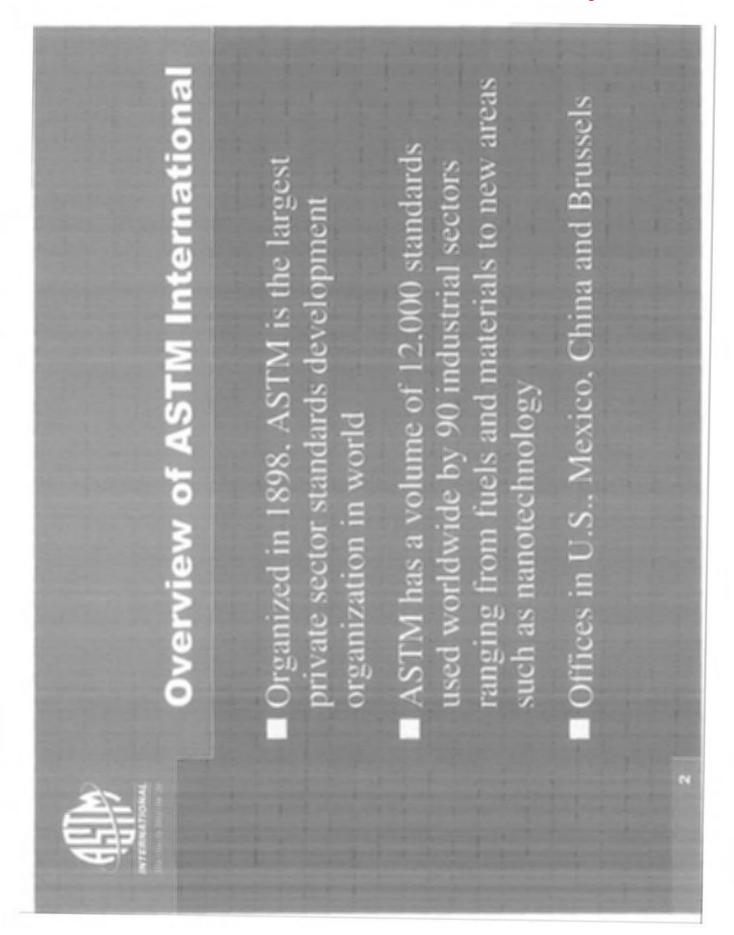
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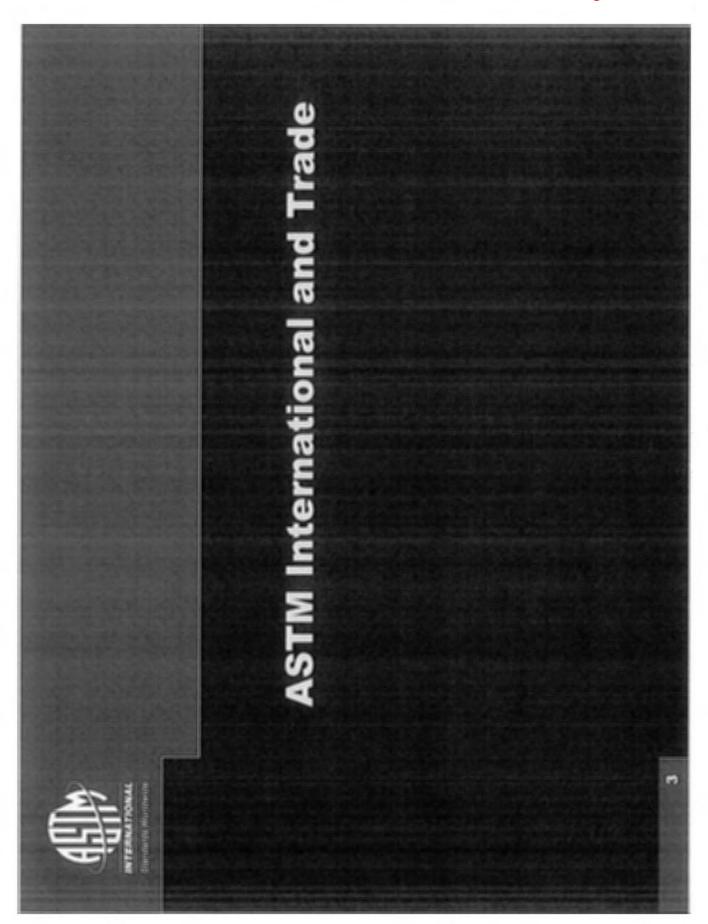
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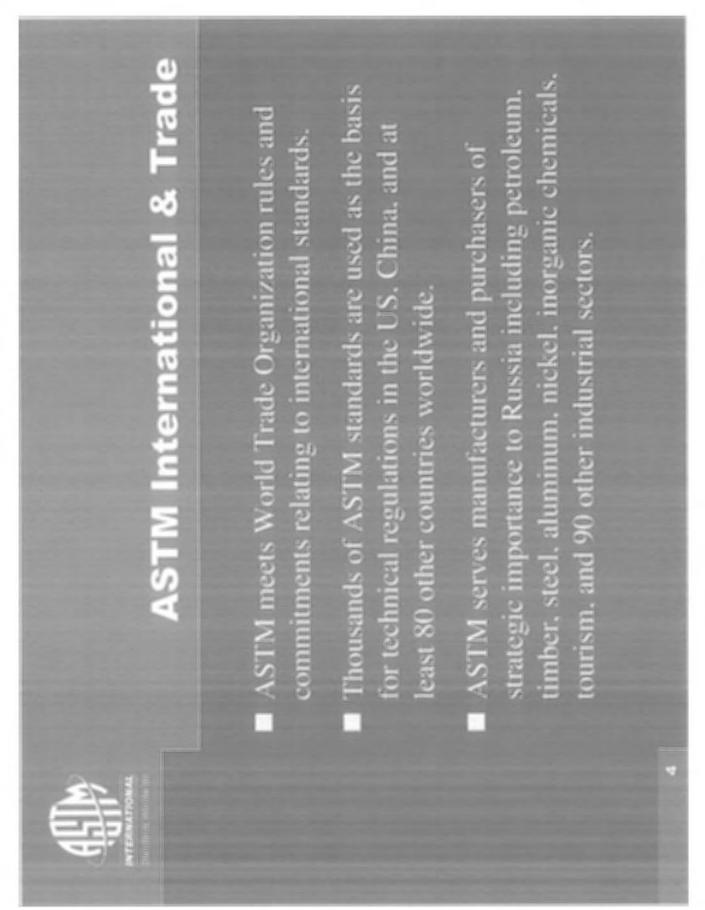
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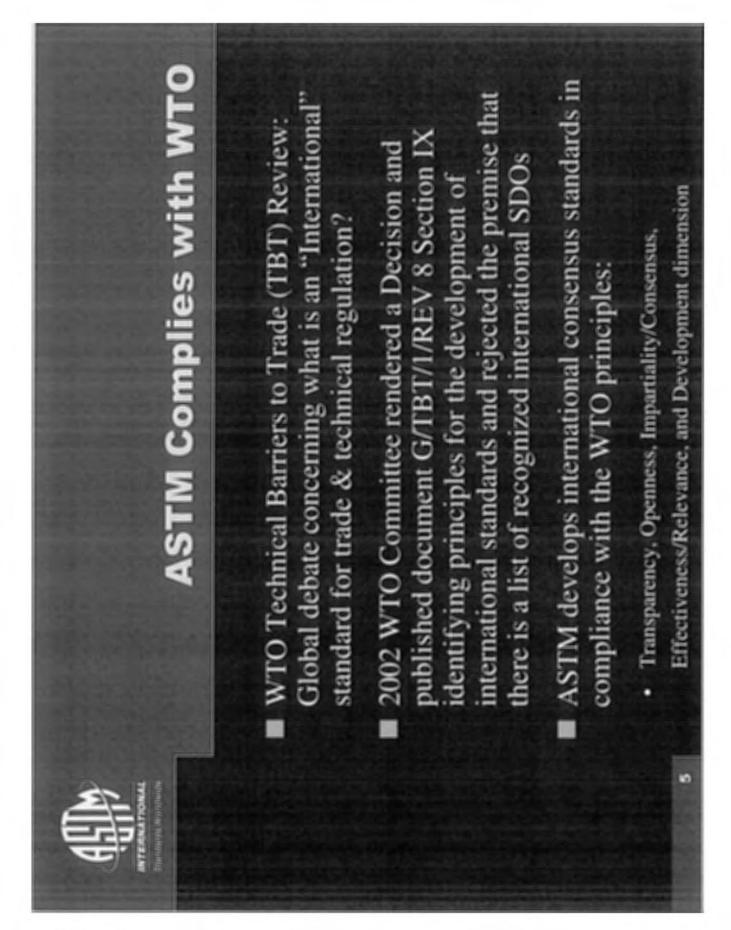
EXHIBIT 23



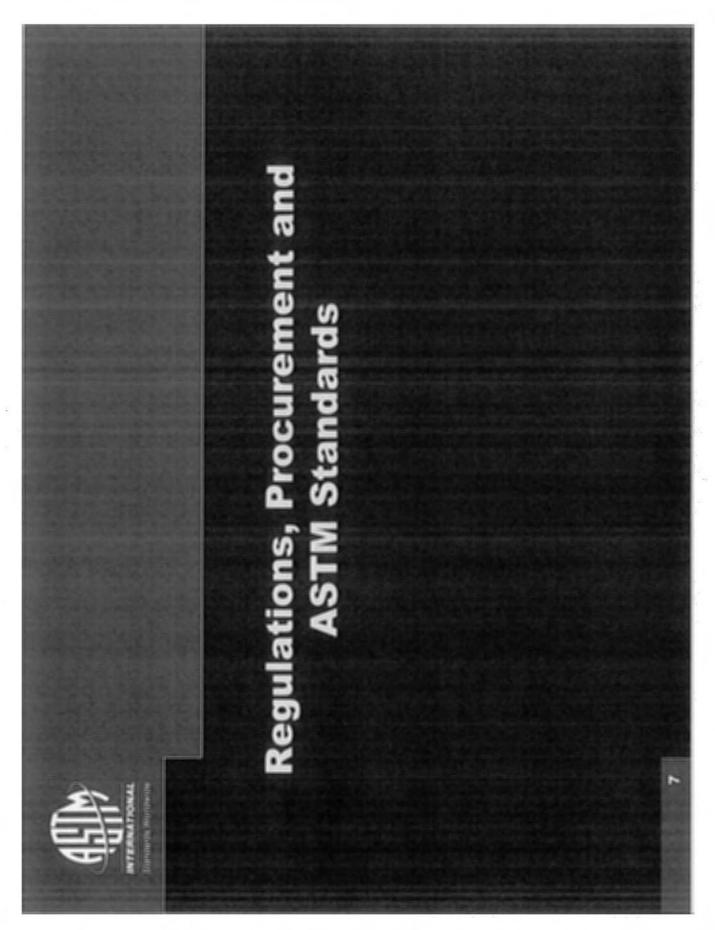


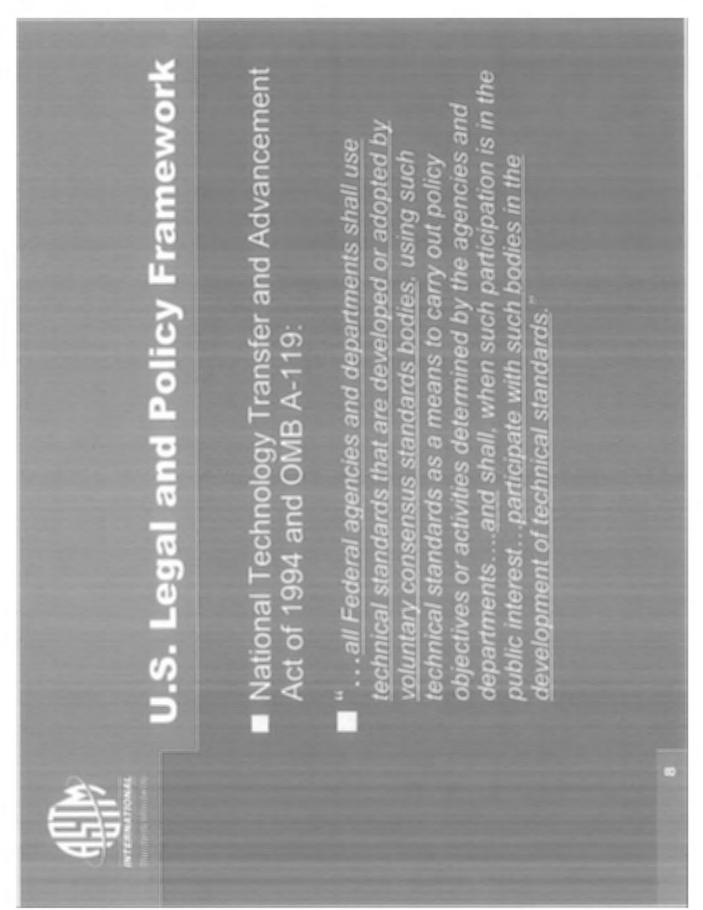


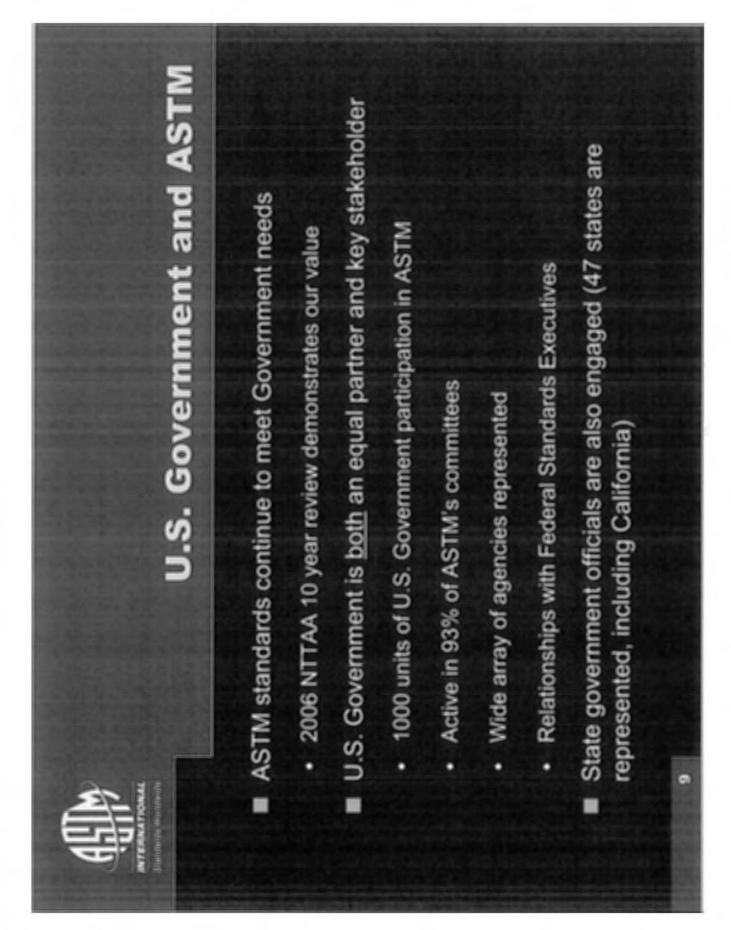


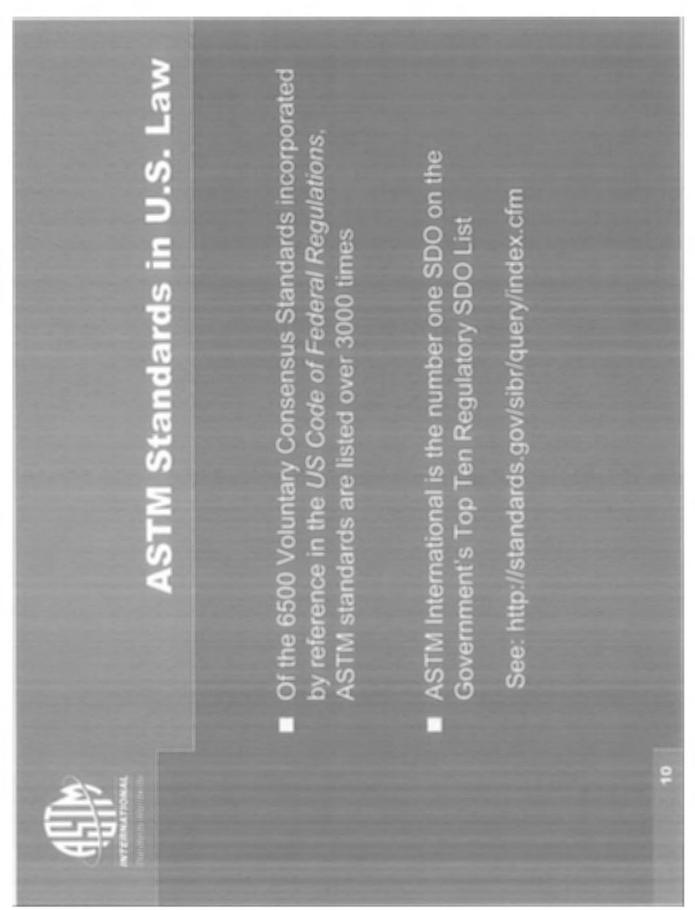


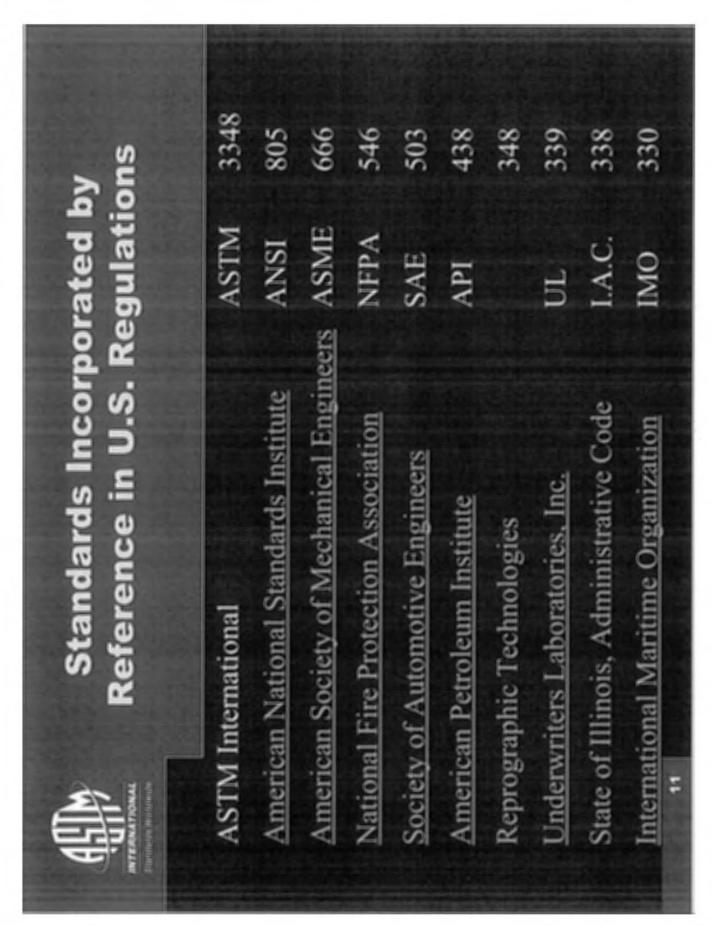


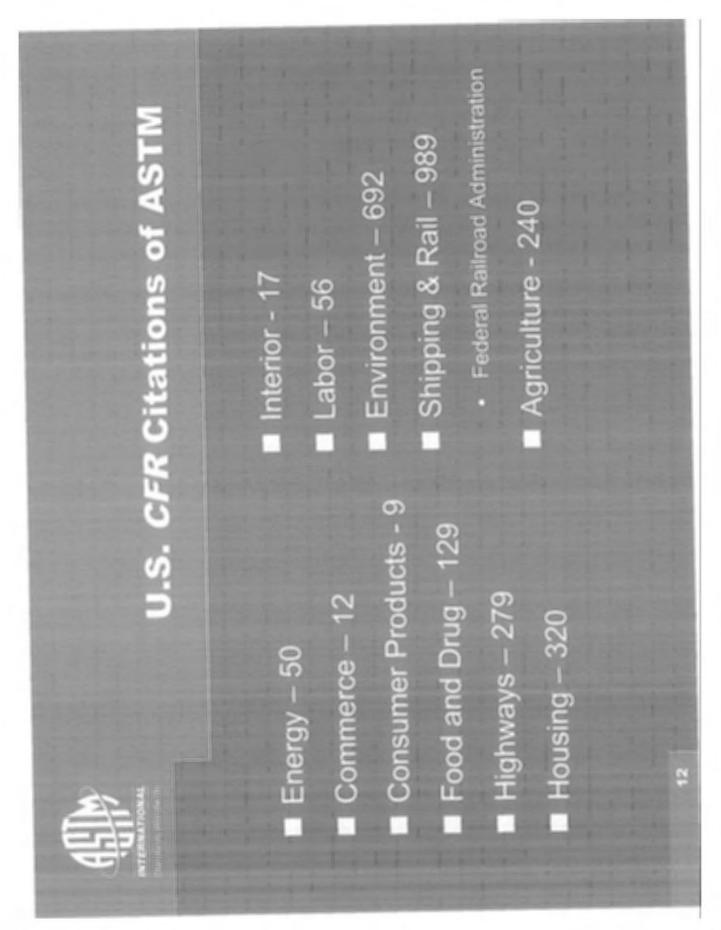


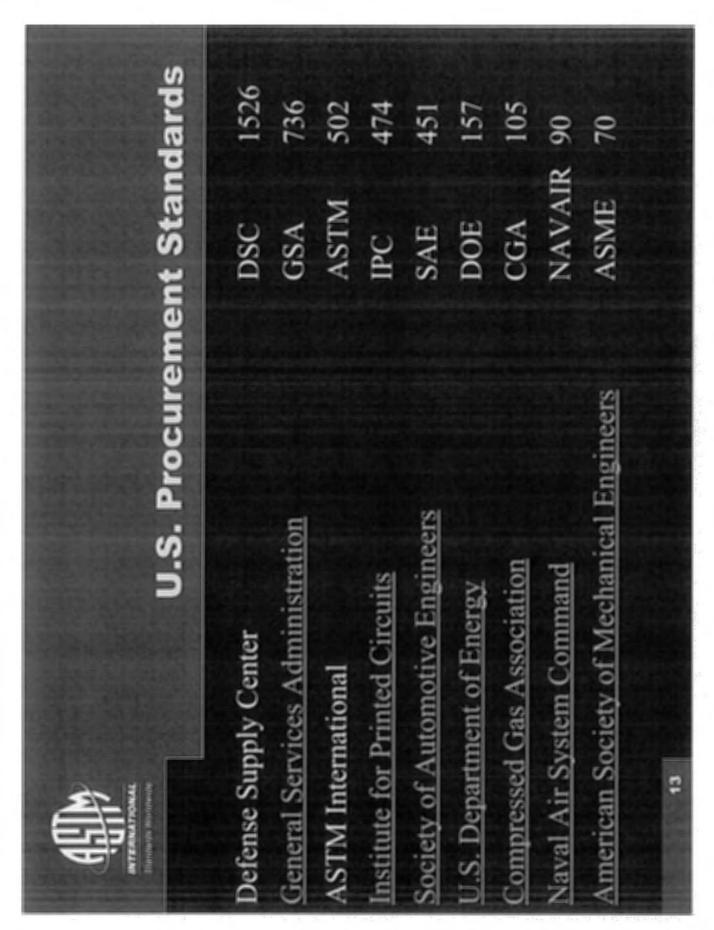


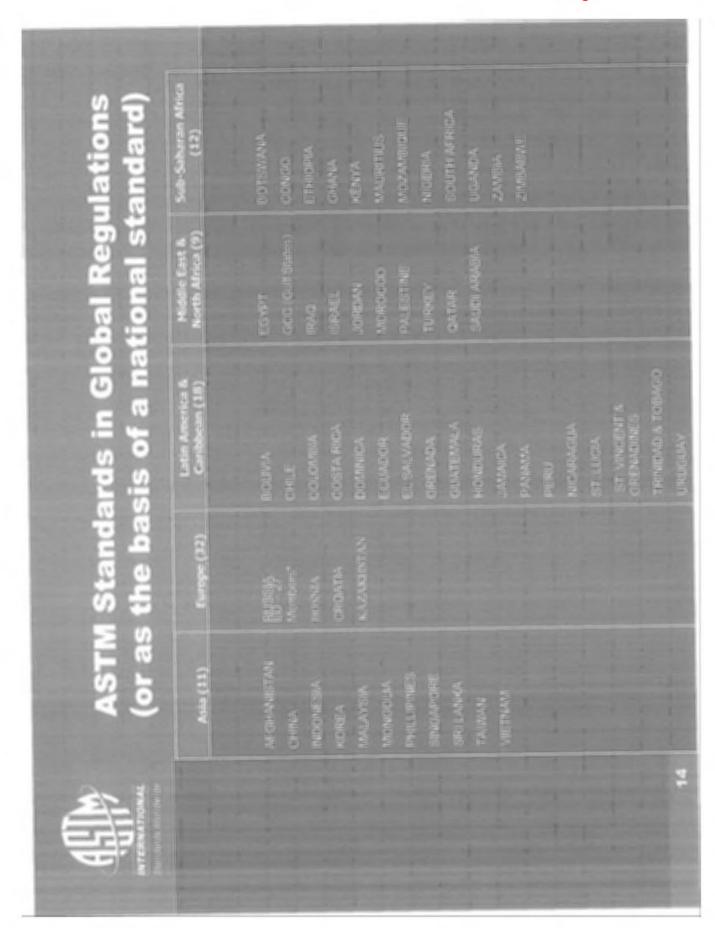


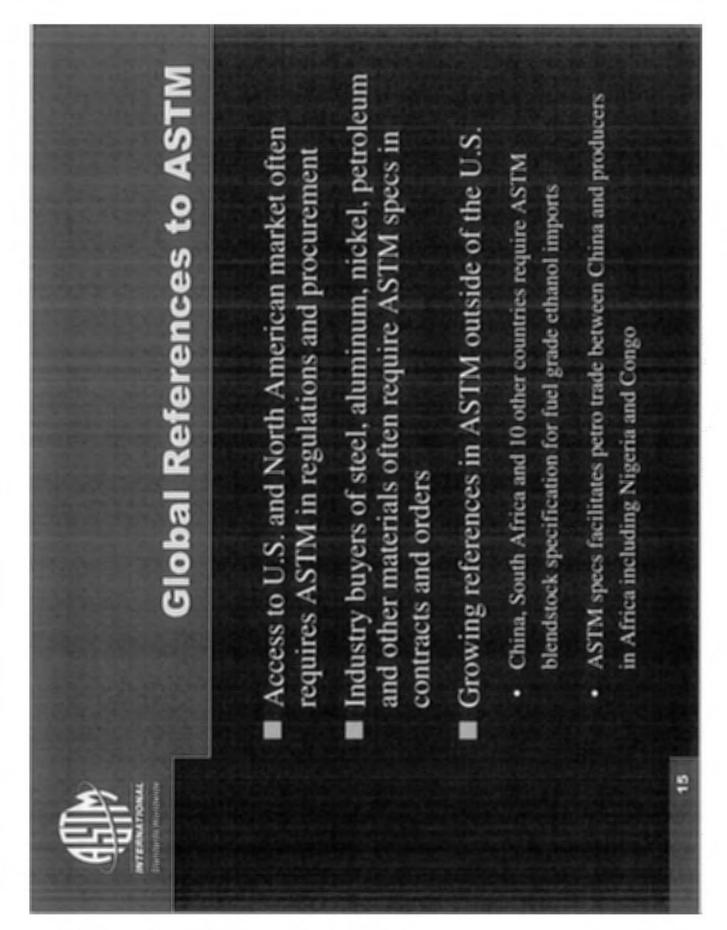


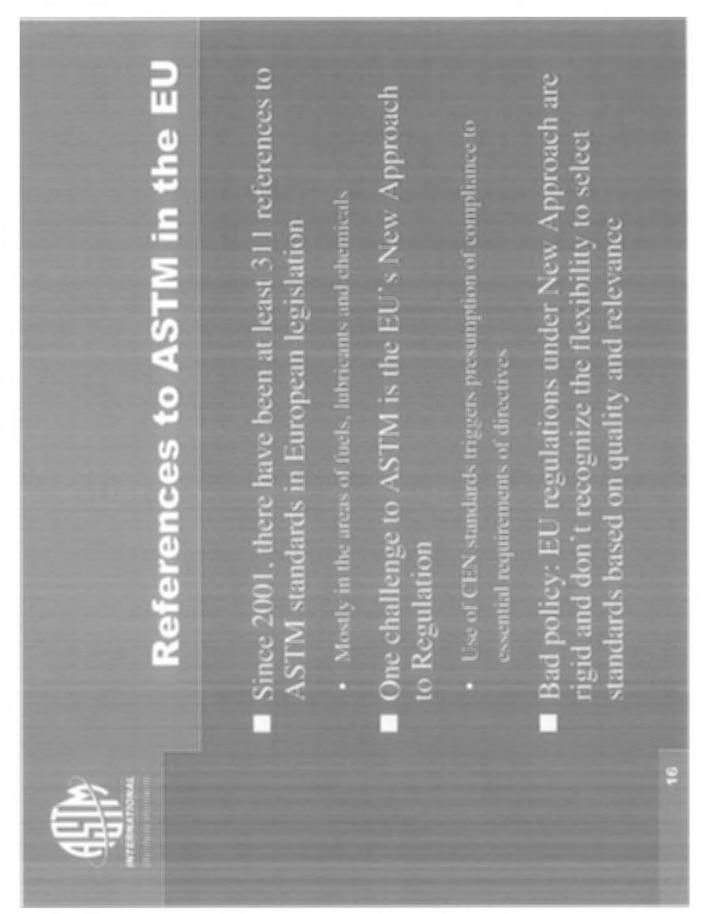


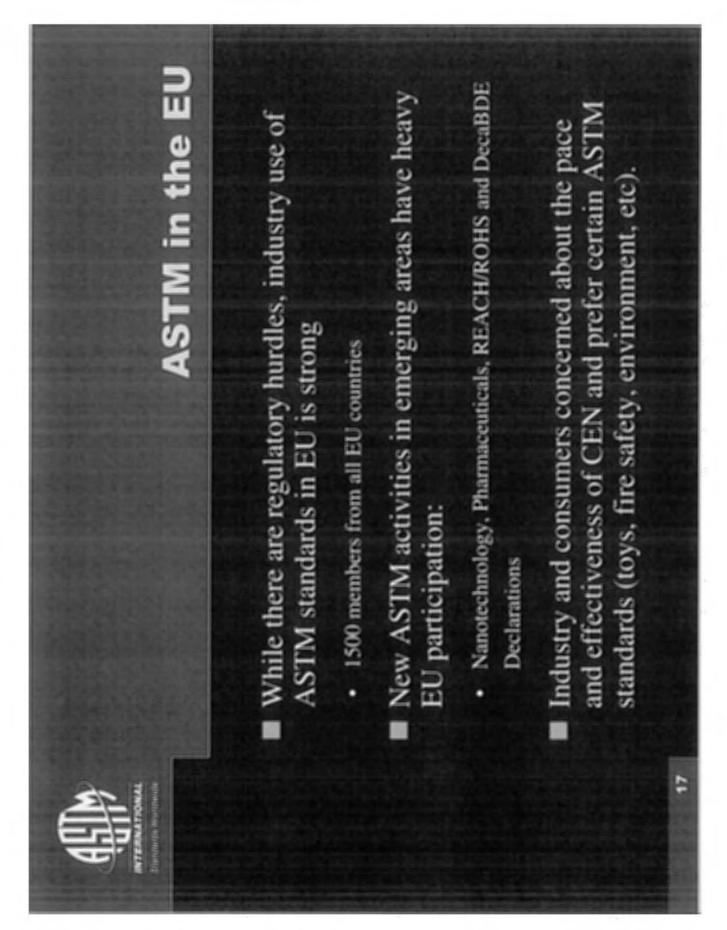


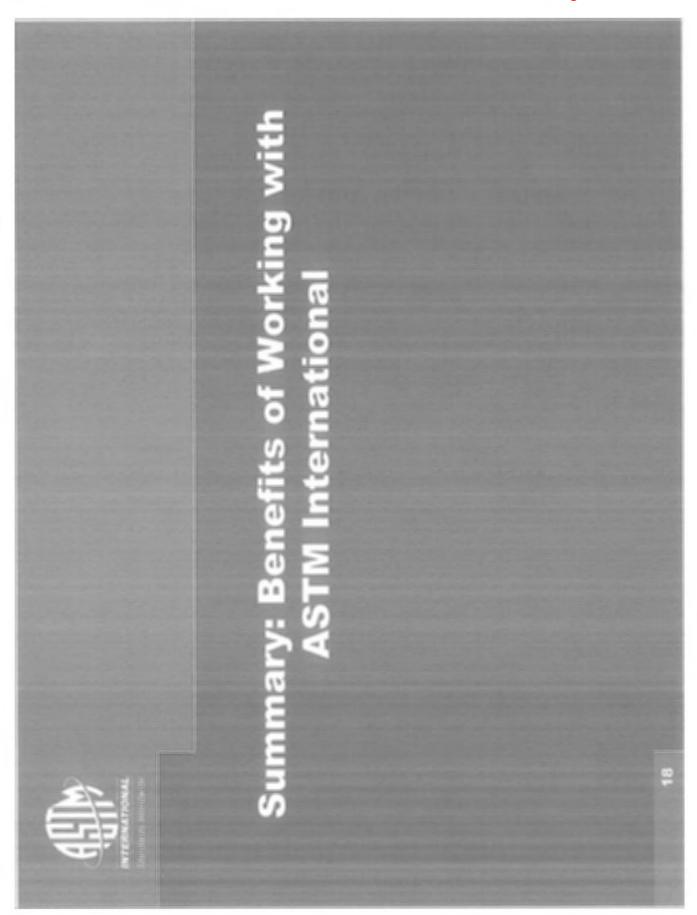


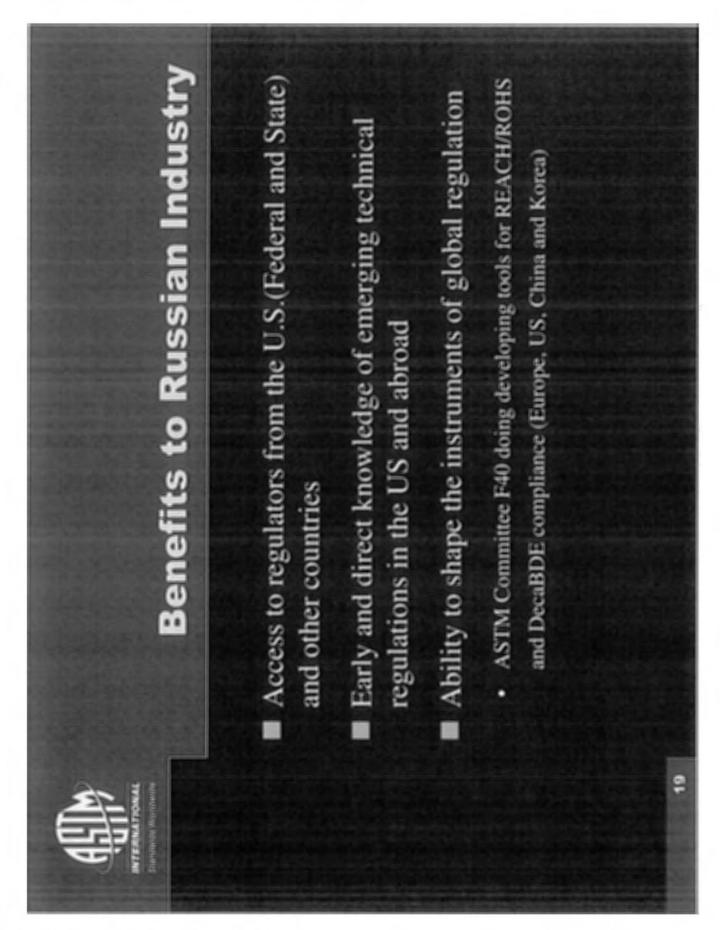


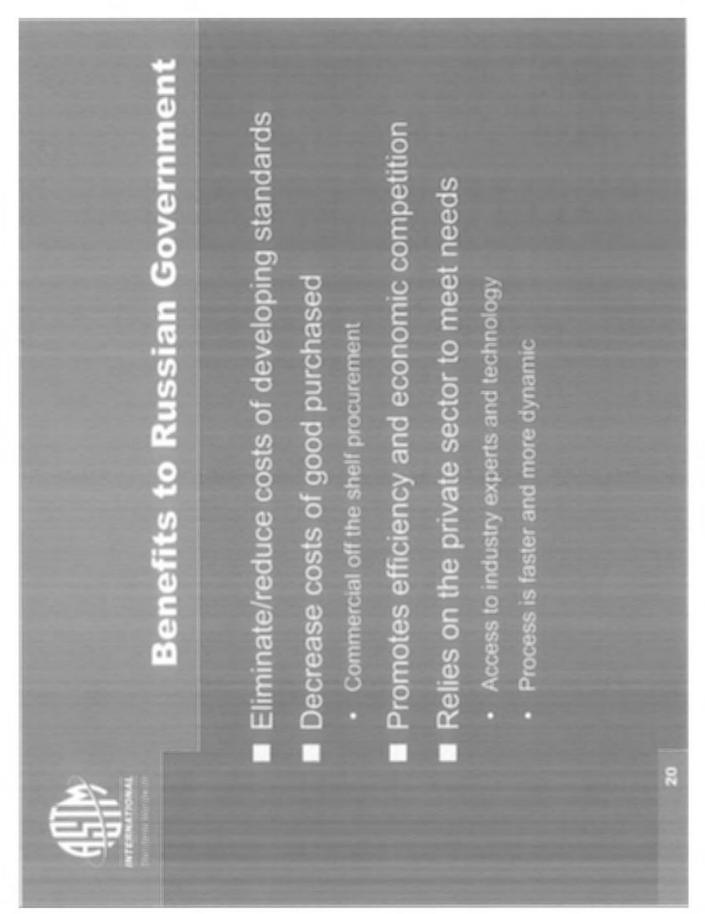












mmary Message Knowledge of ASTM standards is important for complying Increasingly, ASTM standards are being used around the We hope that industry and regulators are open to choose from a portfolio of international standards that includes world (84 countries) in technical regulations and trade. knowledge and expertise that would come from more with U.S. regulations and procurement requirements ASTM Technical Committees would benefit from the ASTM meets World Trade Organization (WTO) criteria for "international" standards Russian participation ASTM International. 21

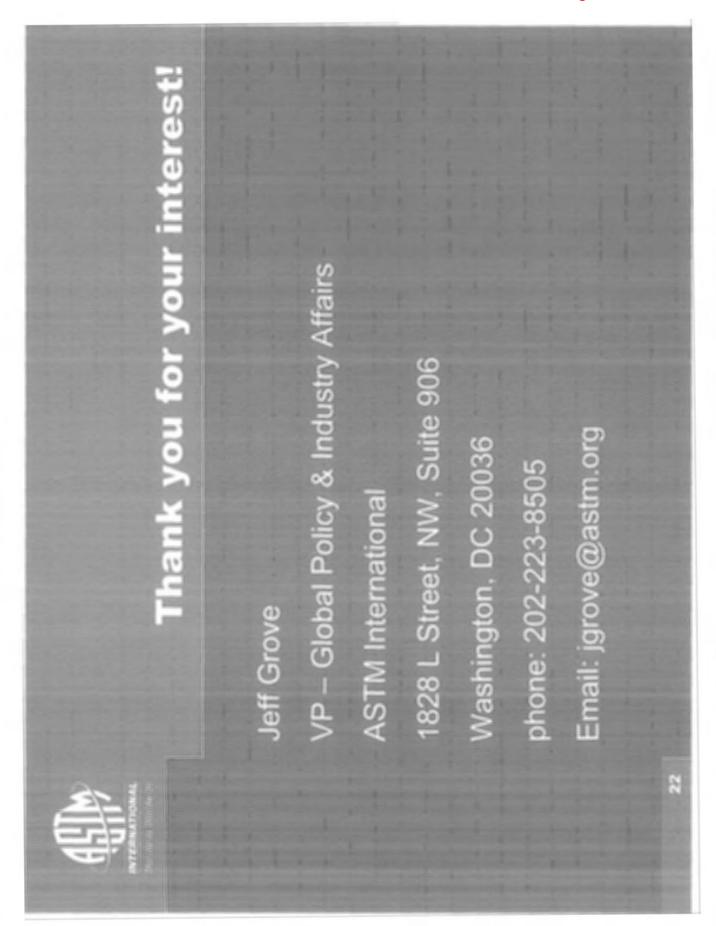


EXHIBIT 24

Case 1:13-cv-01215-TSC Document 122-3 Filed 12/22/15 Page 27 of 169 Page 272 of 537 Filed: 01/31/2018

From:

Petre, Sarah <spetre@astm.org>

Sent:

Thursday, October 4, 2012 4:43 PM

To:

Grove, Jeff <igrove@astm.org>; Smith, Dan <dsmith@astm.org>; Quinn, Anthony

<aquinn@astm.org>

Cc:

McClung, Kate < kmcclung@astm.org>

Subject:

RE: ASTM Follow Up on S1492

Attach:

Three Kids Mine S 1492 Text Oct2012.docx

Per Alex's email below, I would appreciate your feedback on the language. I attached the legislation with my comments.

The primary issue that I would like to discuss with you is:

Should we request that Congress use the language "the most current version of XXX"? (it currently does for two of the three standards in this draft legislation)

Or

Now that we have learned that this language is not technically right because the initial version of the standard that Congress intended to include might be substantively different from an updated version of the standard that would then be automatically incorporated----should we suggest that Congress use language like that which is used in CPSIA and the most recent draft of the gypsum bill? I could supply this sample language to Alex and set his feedback on it.

Thank you!

Sarah

From: McDonough, Alexander (Reid) [mailto:Alexander_McDonough@reid.senate.gov]

Sent: Thursday, October 04, 2012 4:16 PM

To: Petre, Sarah

Cc: Quinn, Anthony; Smith, Dan

Subject: RE: ASTM Follow Up on S1492

Hi Sara-I know it's been over a year since we met but we're now getting around to making the necessary revisions to this S.1492, the Three Kids Mine remediation bill.

I want to be absolutely sure that we properly cite the most up-to-date version of your environmental site assessment standards in the bill. Would you be able to provide us a suggestion how to modify the attached legislative language?

I'm happy to discuss further if that would be helpful. My direct line is 202-224-1052. Thanks!

Alex

Alex McDonough Policy Advisor - Natural Resources Senate Majority Leader Harry Reid 202-224-3542









For more information, or to receive the Reid Report E-Newsletter, visit Senator Harry Reid's website at http://reid.senate.gov

Case 1:13-cv-01215-TSC Document 122-3 Filed 12/22/15 Page 28 of 169 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 273 of 537

From: Petre, Sarah [mailto:spetre@astm.org]
Sent: Tuesday, August 30, 2011 2:21 PM

To: McDonough, Alexander (Reid) **Cc:** Quinn, Anthony; Smith, Dan **Subject:** ASTM Follow Up on S1492

Good afternoon Alex:

Thank you for meeting with ASTM International last week to discuss our work on standards for environmental site assessments as it relates to mine safety in S1492. After a seemingly long week of earthquakes and hurricanes, I am following up with you to provide you with a document that explains the major changes to standard E1903-97 (2002) reflected in the recently approved 2011 version. As mentioned in our meeting, as compared to the language in the statute for two other standards, ASTM E2137-06 and E1527-05, the language for E1903 does not reflect Congress' intent to use the most recent standard, which industry would be using. While the 2002 version of the standard still effectively provides the framework for good commercial and customary practices in conducting a Phase II environmental site assessment, a reference of the most recent standard is important to reflect Congress' intent.

Please let us know how ASTM can be a resource for your staff on this particular legislation and other related issues. ASTM's standards are effective tools to address the environmental, safety and health issues related to abandoned mine sites.

Best to you,

Sarah

Sarah Petre
ASTM International
Manager, Industry and Federal Affairs
Office: 202-223-8399
Cell: 484-358-2455
spetre@astm.org
www.astm.org

From: McDonough, Alexander (Reid) [mailto:Alexander McDonough@reid.senate.gov]

Sent: Wednesday, August 10, 2011 11:23 AM

To: Petre, Sarah

Cc: Quinn, Anthony; Smith, Dan

Subject: RE: Request for Meeting Re: S1492

Sarah-Let's meet in Hart 522. Thanks,

Alex

From: Petre, Sarah [mailto:spetre@astm.org] Sent: Wednesday, August 10, 2011 11:19 AM

To: McDonough, Alexander (Reid) **Cc:** Quinn, Anthony; Smith, Dan

Subject: RE: Request for Meeting Re: S1492

Good morning, Alex:

Let's plan on meeting on August 23 at 10am. Where is the best location to meet you?

Best, Sarah Sarah Petre
ASTM International
Manager, Industry and Federal Affairs
Office: 202-223-8399
Cell: 484-358-2455
spetre@astm.org
www.astm.org

From: McDonough, Alexander (Reid) [mailto:Alexander_McDonough@reid.senate.gov]

Sent: Tuesday, August 09, 2011 4:42 PM

To: Petre, Sarah

Cc: Quinn, Anthony; Smith, Dan

Subject: RE: Request for Meeting Re: S1492

Hi Sarah – I'm available to meet on the 23rd. My schedule is very flexible right now, so please send me a couple good

times that work for you. Thanks,

Alex

From: Petre, Sarah [mailto:spetre@astm.org]
Sent: Thursday, August 04, 2011 3:16 PM

To: McDonough, Alexander (Reid) **Cc:** Quinn, Anthony; Smith, Dan

Subject: Request for Meeting Re: S1492

Good afternoon Alex:

I am contacting you regarding Senator Reid's recently introduced bill, S1492, on the remediation and reclamation of the Three Kids Mine Project Site, which has a sister bill, HR2512, sponsored by Representative Heck.

ASTM is pleased to see that Senator Reid values the development of a public-private partnership, particularly with the utilization of ASTM International's standards, for the success of the Three Kids Mine project. To give you a brief background on ASTM International: we are a non-profit organization that serves as a forum for the development and publication of technical, voluntary consensus standards for materials, products, services, and systems. ASTM standards include product specifications, safety standards, and test methods that cover a range of products from environmental assessment and building materials to clinical tools and consumer products. We bring together technical experts representing regulators, producers, consumers, and academia to create voluntary consensus standards. Participation in ASTM International is open to all with a material interest, anywhere in the world. ASTM standards are used in business transactions, federal and state regulations, as well as international commerce. More than 100 industries rely on ASTM standards and over 2,500 ASTM Standards have also been adopted as the basis for national standards or are referenced in regulation outside the United States.

ASTM's standards are effective tools to address the environmental, safety and health issues related to abandoned mine sites. As you know, with the passage of S1492 and HR2512, three ASTM Standards will be used for the project, including: ASTM E2137-06: Standard Guide for Estimating Monetary Costs and Liabilities for Environmental Matters; E1527-05: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process; and E1903-97 (2002): Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process.

ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action just approved the 2011 revision and update of E1903-97 (2002). For these reasons, ASTM has already met with the Majority and Minority Staff of the House Subcommittee on Energy and Mineral Resources. We would also like to request a meeting with you to discuss the ASTM standard, its changes, and how it affects the project and legislation. Are you available for a meeting on August 16, 19, 22, or 23?

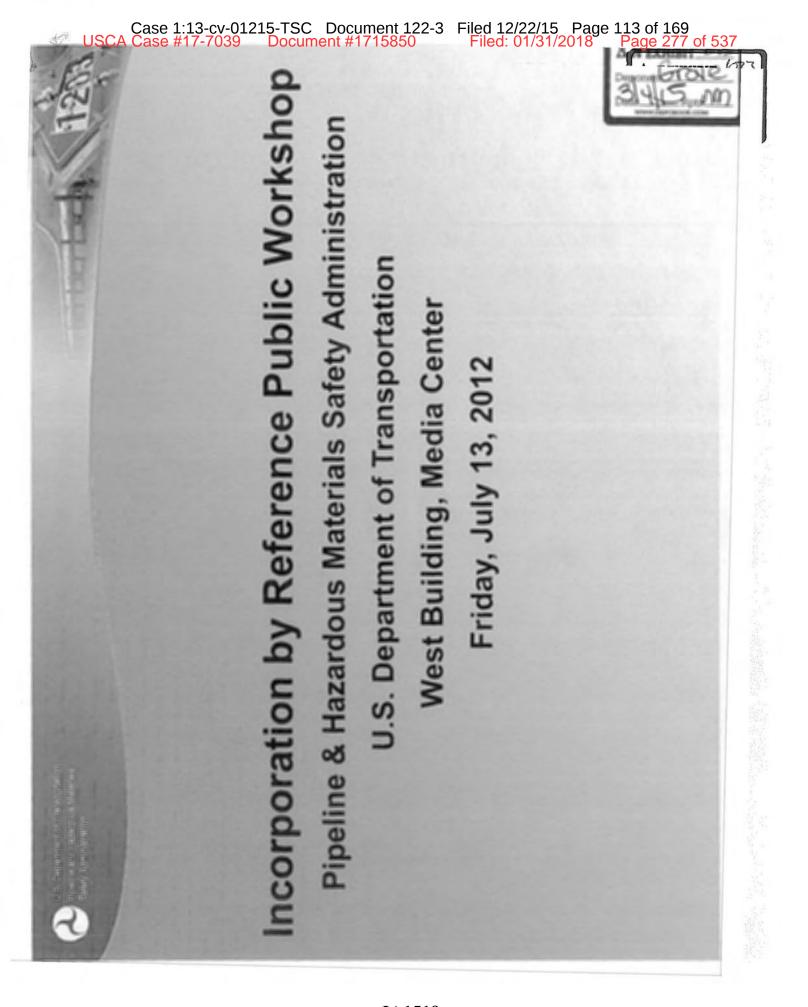
I look forward to your response. Thank you,

Sarah Petre

Case 1:13-cv-01215-TSC Document 122-3 Filed 12/22/15 Page 30 of 169 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 275 of 537

Sarah Petre
ASTM International
Manager, Industry and Federal Affairs
Washington Office
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Washington, DC 20036
Office: 202-223-8399
spetre@astm.org
www.astm.org

EXHIBIT 26



Vice President of Global Policy and Industry Affairs **ASTM International** Jeff Grove

PHMSA Public Workshop: Implementing the Incorporation by Reference Requirements of the Pipeline Safety Act of 2011

Jeff Grove Vice President Global Policy & Industry Affairs **ASTM International**



ASTM International

Established in 1898

- Private sector, not for profit organization
- Venue for the development of voluntary, consensus standards
 - Enhance health, safety and quality of life
 - Ensure reliability of materials and products
 - Facilitate trade worldwide



uly 13, 2012

PHMSA/ASTM Standards

- o A106/A106M
- o A333/A333M
- o A372/A372M
- o A381
- o A53/A53M
- o A671

- o A672
- o A691
- o D2517
- o D638
- o F1055
- o D2513



July 13, 2012

Technical Knowledge

- The references are highly technical specifications, requirements, and methods of testing for things such as
 - Carbon and alloy steel pipe at various temperatures
 - Epoxy resins and plastics in pipes
- Limited value to the general public



uly 13, 2012

Access During Rulemakings

- ASTM provides public access to standards incorporated by reference during public review periods of PHMSA rulemakings
- Consistent with Sec 24 as access is provided at no cost on a website
- Currently providing access to ASTM
 D2517 as part of a PHMSA NPRM



Sec 24 Impacts ASTM

- Sec 24 conflicts with goals of the NTTAA and OMB Circular A119 which have been effective in utilizing standards in support of regulations
- Threatens public-private collaboration that has worked for over 100 years
- Underestimates the costs and process of developing high quality standards



July 13, 2012

Reasonable Access

- ASTM strives to provide reasonable access to standards incorporated by reference by PHMSA
- The list price for these 12 standards range from \$40 to
 \$57 each which is a fair price for the technical knowledge
 - Many of the producers, users and inspectors of pipeline materials and products access these standards at no cost as a benefit of their ASTM membership.
 - Many others access the documents far-below the list prices through commercial agreements and site-license agreements
- Our approach is to be flexible, reasonable and fair, and to work with stakeholders to find an access model that works



Costs of Standards Development

- Investment in technology
 - Electronic standards templates
 - Electronic balloting and editing
 - On-line collaborative platform
 - Virtual meeting technology
 - Web-based resources
- Supporting programs/products
 - ILS, PTP, Symposia/Workshops, Certification, Training, Videos
- ANSI Accreditation
 - Maintain offices worldwide and a professional staff to support standards development and distribution



July 13, 2012

USCA Case #17-7039

Document #1715850

Development Models

- What model works best to pay for the production of standards?
- o Under the ASTM model

Costs are spread amongst thousands of users

\$75 annual membership gives access to many who need it

No projects fees or front-loaded costs



July 13, 2012

ASTM Model Works

- Produces high-quality standards
- Provides value to ASTM members, the public and the government
 - Particularly benefits SME's and individuals who engage on a volunteer basis without corporate funding
- Difficult for the government to replicate
 - Costly to government to duplicate efforts
 - Public/Private collaboration may be chilled
 - Quality and Efficiency could be at risk





Summary/Pathway Forward

- We are sensitive to the challenges Sec
 24 places on PHMSA.
- We already provide public access during rulemakings and make standards available on a reasonable basis.
- To implement Sec 24, one pathway is to collaborate on an agreement that provides public access without fundamentally changing the core of our existing model.



Thank you

Contact Information:

ASTM International 100 Barr Harbor Drive West Conshohocken, PA

Jim Thomas, President – <u>jthomas@astm.org</u>
John Pace, VP, Publications – <u>jpace@astm.org</u>
Jeff Grove, VP, Government and Industry Affairs – <u>jgrove@astm.org</u>



www.astm.org

July 13, 2012

EXHIBIT 28



CM SUBMITTAL FORM

NOTE: Use separate form for each comment. Submittals (MS Word 2000 preferred) may be attached to e-mail (preferred), submitted on diskettes or CD, or submitted in paper by mail or fax to ASHRAE, Manager of Standards, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: change.proposal@ashrae.org. Fax +1-404/321-5478.

	1. Submitter:				
	Affiliation:				
	Address: Country:	City:	State:	Zip:	
	Telephone:	Fax:	E-Mail:		
) []	exclusive royalty rights, i rights in publication of the have the authority and an Submitter's signature: All (insert name) hereby grant the America exclusive royalty rights, i acquire no rights in public	an Society of Heating, Refrigerating as neluding non-exclusive rights in copyre standard in which my proposals in the empowered to grant this copyright relectronic submittals must complete the Society of Heating, Refrigerating and neluding non-exclusive royalty rights it ration of this standard in which my produce the authority and am empowered standard:	ight, in my proposals. I is, or other analogous, for ease. ne following statement:, through thi I Air-Conditioning Engin n copyright, in my propo posals in this or other sin	understand that I acquire no orm is used. I hereby attest that is electronic signature, neers (ASHRAE) the non- osals and I understand that I milar analogous form is	u I
	3. Clause (section), sul	o-clause or paragraph number; and p	page number:		
	4. I propose to: (check one)	[] Change to read as follows [] Add new text as follows	[] Delete and sub: [] Delete without		
	Use underscores to sho	ow material to be added (<u>added</u>) and str additional pages if		ne deleted (deleted). Use	
	5. Proposed change:	usoniona pages n			
	6. Reason and substan	tiation:			
		nange increase the cost of engineering the increase is justified.	g or construction? If yo	es, provide a brief	0
	[] Check if additional pag	es are attached. Number of additional	pages:		
		r referenced materials cited in this prop and references are relevant, current, an ttachments here:			

Revised 1-30-2006

EXHIBIT 44

Case 1:13-cv-01215-TSC Document 122-4 Filed 12/22/15 Page 11 of 97 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 295 of 537



Rev. 10/09

Part 1 of 2 APPLICATION FOR PROJECT COMMITTEE ORGANIZATIONAL REPRESENTATIVE MEMBERSHIP EXHIBIT

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	SSPC 90.1				or Buildings I						The said of the state of the said of the s
	SSPC 90.2				esign of Low-						
	SSPC 161				Commercial A						
. Na	me of Applica	ant									
rint or	Type Name (Fi	rst, N	Middle Initial, La	st)					Today's Da	te	
ASHRAE Member ID		Primary or Alternate Representative			е?	Organization Represented					
. Biog	graphical info	rma	ation on ASH	RA	E's website:	ch	eck one):				
] Has	been completed	d/up	dated and conta	ins	current informat	ion.					
] Will I	be completed/u	pdate	ed on								
and	scope of this	s Pr	oject Commi	ttee	lict of Interes e, has been c	om	pleted: 🔲 🗅	/es	□No	th	e purpose
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4.000	eral Interest lucer/Vendor	000	General Interest Manufacturer Own/Oper/Occ		General Interest Manufacturer Own/Oper/Occ		Designer General Interest Industry		General Interest Industry Producer		General Interest Manufacturer Owner/Operator
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Dyc	igning below		artify that:								
elected ommitte oyalty-fro ommitte	l as an Organizat e I hereby grant ee rights, includir e for ASHRAE p	ional the A ng no ublica	Member of any A merican Society nexclusive, royal ation and I unders	of H ty rig	leating, Refrigeral ghts in copyright,	ing to an righ	and Air-Condition ny contributions I nts in publication	ing mak of su	Engineers (ASHF se to documents sch documents in	RAE) prep which	consultant to such the non-exclusive ared by or for such my contribution opyright release.
am auth	orized to commit	that	my organization a	agre	es to the following	j :					
b) to	provide an individ	dual y	with appropriate to	echr	o achieve the Title	uali	fications to serve	as th	neir representativ	e, ar	
d) to	encourage the co provide feedbac ganization's repre	ck to	the constituence	y of	tion to provide ing the organization	on on	the disposition	of i	input and comm	ents	submitted by th
				SHE	RAE for expenses	rela	ted to participatio	n in	the activities of th	ie Si	PC/SSPC
	URE										

Submit Completed Form to: (PCMembership@ashrae.net); Tel. (678) 539-1125; Fax (678) 539-2125

Note: If applying for Individual membership, please complete the Individual Application for Project Committee Membership with your information.

BACKGROUND

ASHRAE Standards 34, 62.1, 62.2, 90.1, 90.2 and 161 impact a diverse group of individuals and industries. The constituency for these standards transcends the typical interest categories suggested by ANSI. These interest categories are intended to address the multidisciplinary nature of the standards, and to provide a better balance of interest categories for the SPC/SSPC.

DEFINITIONS

interest: the perspective of a member of a project committee, as judged by his or her present and past sources of income, fees, or reimbursements of related expenses, in the context of the purpose and scope of the project committee. The perspective may also be judged by the recorded views of the individual, or of any organization he/she is employed by or of which he/she is a member.

interest categories: the principal (top) tier of interest classifications. For some standards projects, it may be appropriate to designate subcategories of one or more interest category.

INTEREST CATEGORIES

Compliance: Persons primarily interested in compliance with the standard. A person in this category would make their living from developing regulations, enforcing the requirements of the standard, developing programs tied to the standard, or advocating the standard. Example members of this category would be building code officials, building code organizations, state energy offices, and other local, state, and federal officials.

Designer: A designer of buildings, building systems or subsystems (including envelope, HVAC, lighting). A person in this category would make their living from designing buildings and systems that are impacted by the standard. Example members of this category would be architects, design firms, consulting engineers, lighting designers and employees of energy consulting firms.

Designers/Builders: Those who provide building design and construction services, including consulting engineers, HVAC and general contractors, design /build contractors, or representatives of associations of these types of professionals.

General: Building regulatory officials or their representatives, researchers, educators, IAQ specialists, and others with expertise in the fields of ventilation and indoor air quality. Also, medical doctors, public health experts, industrial hygienists or representatives of associations of these types of professionals.

In addition, this category is intended for those who have interests other than those described in the other categories. Example members of this category would be employees of research institutions, universities, nationally recognized testing laboratories, employees of energy advocacy groups, and others with a general interest in energy utilization in buildings.

Industry: Construction firms or manufacturers, producers, or distributors of products or systems that would be installed in buildings. A person in this category would make their living from constructing buildings or producing or distributing products impacted by this standard or representing groups of manufacturers impacted by this standard. Example members of this category would be contractors, manufacturing firms, assembly firms, distributors and wholesalers, and industry trade associations that represent these groups.

Manufacturers: Employees or representatives of manufacturers, distributors or trade associations of HVAC equipment, HVAC controls, and equipment designed to enhance indoor air quality (e.g. air cleaners). Also, individuals associated with products used in the construction of buildings (e.g., finishes, wall and floor coverings, wood products) and used within buildings by occupants (e.g., furniture and furnishings, tobacco products, appliances, office equipment).

Owners/Operators/Occupants: Employees or representatives of building owners/managers, building engineers, facility managers, and consultants who specialize in working in existing buildings (as opposed to those who design and construct new buildings). Also representatives of building occupants.

Producer: those directly concerned with the production or distribution of the product or service involved, including industry associations representing producers or distributors, or those receiving substantial support from a producer directly concerned.

User: Users of buildings and building systems and subsystems. A person in this category would make their living from owning or operating buildings. Example members of this category would be building owners and operators (private and governmental), tenants, and trade associations or organizations representing these groups.

Utility: Those who provide energy services to buildings impacted by this standard. A person in this category would make their living from providing energy services to a building impacted by this standard. Example members of this category would be electric, gas, steam, or other utility and trade associations or organizations representing these groups.

Note: If applying for Individual membership, please complete the Individual Application for Project Committee Membership with your information.



PART 2 of 2 PROJECT COMMITTEE ORGANIZATIONAL MEMBERSHIP CONTACT INFORMATION

			~				
Organization							
Contact Name / Title							
Address							
City	State	Zip					
Phone	Fax						
e-mail	1						
	Title						
Primary Representative Name / 1 Address City	State	Zîp					
Address		Zip					
Address City Phone e-mail	State	Zîp					
Address City Phone e-mail Alternate Representative Name /	State	Zîp					
Address City Phone e-mail Alternate Representative Name /	State Fax						
Address City Phone e-mail	State	Zip					

Please describe your organization's interest in this Project Committee:

Please submit this form with copies of the "Application for Project Committee Organizational Representative Membership" forms for each applicant listed above.

Submit completed forms to PCMembership@ashrae.net or fax to 678 539-2125

JA1539

EXHIBIT 48

Case 1:13-cv-01215-TSC Document 122-4 Filed 12/22/15 Page 24 of 97HBT USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 299 of 537

APPLICATION FOR MEMBERSHIP ON ASHRAE STANDARD OR GUIDELINE PROJECT COMMITTEE

Committee Number Committee	ee Name	
First Name or Initial N	Middle Name or Initial	Last Name
ASHRAE Member Number (if know	vn) Date	
An updated edition of the ASHRA	AE Biographical Record	is (check one):
On file at ASHRAE Headquar	ters	
Attached to this application		
A Potential Sources of Bias and this Project Committee is (check		specifically applicable to the purpose and scope o
On file at ASHRAE Headquar	ters	
Attached to this application		
If elected as a voting member of (Check one. See reverse side for		I would qualify in the following Interest Category
☐ User Interest member		
☐ Producer Interest member		
☐ General Interest member		
consultant to such committee I he Conditioning Engineers (ASHRAI rights in copyright, to any contribut ASHRAE publication and I under	ereby grant the America E) the non-exclusive, routions I make to docume stand that I acquire not logous form are used.	deline Project Committee or appointed as a in Society of Heating, Refrigerating and Airyalty-free rights, including nonexclusive, royalty ents prepared by or for such committee for rights in publication of such documents in which my hereby attest that I have the authority and I am
nature		

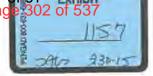
DEFINITIONS EXCERPTED FROM ANNEX A MANUAL FOR PROCESSING ASHRAE STANDARDS COMMITTEE DOCUMENTS

interest: the perspective of a member of a project committee, as judged by his or her present and past sources of income, fees, or reimbursements of related expenses, in the context of the purpose and scope of the project committee. The perspective may also be judged by the recorded views of the individual, or of any organization he/she is employed by or of which he/she is a member.

interest categories: the principal (top) tier of interest classifications. For some standards projects, it may be appropriate to designate subcategories of one or more interest category. Following are examples of functions covered by each interest category:

- Producer: those directly concerned with the production or distribution of the product or service involved, including industry associations representing producers or distributors, or those receiving substantial support from a producer directly concerned.
- User: those who use the product or service involved, or those who receive substantial support from a user directly concerned, but are not involved with its production or distribution. This reference is not to users of the standard, but to users of the product or service covered by the standard.
- General: those who have interests other than those described above and may include consulting engineers or employees of appropriate Government agencies, nationally recognized testing laboratories or educational institutions, and codes-oriented individuals.
- Example subcategories of the User interest category follow:
- **User-Consumer**: a person using goods and services rather than producing or selling them, when the standards activity deals with a consumer product such as a room air conditioner.
- **User-Industrial**: the industrial user of a product, where the standards activity deals with an industrial product such as refrigerant chemicals.
- User-Government: the representative of a government agency, where the standards activity is likely to be used as the basis for government agency procurement such as for the design or performance testing of building systems or equipment.
- User-Labor: a representative of labor, where the standards activity deals with worker products used in the workplace or with the workplace environment.
- Note: The subcategories shown are for example only. The SPLS Subcommittee of the Standards Committee may approve chairman-recommended use of a) subcategories for any interest category, b) no subcategories at all, or c) different interest categories.

EXHIBIT 49







Memorandum of Understanding Between The United States Department of Energy And The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

By this Memorandum of Understanding (MOU), the U.S. Department of Energy (DOE) and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) agree to further their long-term relationship by working cooperatively to improve the efficient use of energy and the viable and widespread use of renewable energy sources, and to minimize the impact of energy use on the environment.

DOE and ASHRAE are committed to working together toward the following goals:

- Promoting and supporting the continuing development and distribution of ASHRAE standards related to energy efficiency, in particular:
 - ANSI/ASHRAE/IES Standard 90.1, Energy Efficient Design of New Buildings Except Low Rise Residential Buildings.
 - ANSI/ASHRAE/IES Standard 90.2, Energy Efficient Design of Low-Risc Residential Buildings
 - ANSI/ASHRAE Standard 62.1, Ventilation and Acceptable Indoor Air Quality In Commercial, Institutional, Industrial and High-rise Residential Buildings,
 - ANSI/ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings.
 - ANSI/ASHRAE/IES Standard 100, Energy Efficiency in Existing Buildings.
 - ANSI/ASHRAE 135, BACnet A Data Communication Protocol for Building Automation and Control Networks,
 - ANSI/ASHRAE/USGBC/IES Standard 189.1, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings, and
 - Proposed ASHRAE/NEMA Standard 201, Facility Smart Grid Information Model
- Promoting and supporting implementation of ASHRAE standards through training programs, including self-directed learning, building code interaction, and ASHRAE Chapter-oriented training.
- 3) Promoting and supporting development of guidance for exceeding the minimum efficiencies set by Standard 90.1 and Standard 90.2, and new metrics for commercial building and residential energy efficiency and environmental impact.
- Cooperating in, and supporting research into, clean and renewable sources of energy, energy efficiency in buildings and equipment, and environmental impact of energy and material use.

Page 1 of 3

- Cooperating in promotion of ANSI/ASHRAE standards adoption in the International Standards Organization (ISO) standards.
- 6) Collaborating on the accelerated development and distribution of advanced energy design guidance publications, such as the 30%, 50% and net-zero Advanced Energy Design Guides that can support accelerated transformation to a more sustainable built environment.
- Cooperating in the development and adoption of mechanisms that promote energy efficiency in buildings, such as the Building Energy Quotient (Building EQ) program and the professional certifications.
- 8) Cooperating in promotion of ANSI/ASHRAE standards adoption in building codes.
- 9) Working within the building community and related professions to encourage the interoperability of building related software and integrated solutions among design disciplines, manufacturers, contractors, building owners and operators, to increase energy efficiency, health, and productivity in new and existing buildings.
- 10) Advancing and supporting the professional development of DOE personnel by facilitating membership, attendance, and active participation at the local and Society levels of ASHRAE, especially as members of Technical Committees and Standard Project Committees, and by providing a venue for publication of research and practice.
- 11) Ensuring sufficient numbers of qualified professionals through the full spectrum of building design, equipment installation, building commissioning, building operations and maintenance, and facility management through comprehensive workforce development programs. This includes promoting and encouraging the study of mathematics and science to pre-college students, quality technician and contractor training, the study of building design within college curricula, and the pursuit of continuing education in all of these categories of building professionals.
- 12) Providing and supporting communication of information regarding technology transfer to building owners and management about the interrelationships between mechanical systems and building operating costs, noting energy, indoor environmental quality workplace performance, client satisfaction, and public safety.
- 13) Monitoring the operational, energy and environmental impacts of new counter-terrorism design features, and promoting minimization of those impacts.
- 14) Collaborating to increase the impact of the all energy hubs created as part of the DOE Energy Efficient Building Systems Regional Innovation Cluster Initiative.
- 15) Driving the development and implementation of next-generation refrigerants that achieve low-GWP (Global Warming Potential) targets and concurrently improve equipment energy efficiency.

Collaboration under this MOU will be in accordance with applicable statutes and regulations.

Page 2 of 3

Case 1:13-cv-01215-TSC Document 122-4 Filed 12/22/15 Page 29 of 97 JSCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 304 of 537

This MOU in no way restricts either of the parties from participating in any activity with other public or private agencies, organizations or individuals.

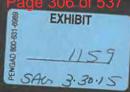
This MOU is neither a fiscal nor a funds obligation document. Nothing in this MOU authorizes or is intended to obligate the parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value.

This MOU is strictly for internal purposes for each of the parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of either party. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity.

The MOU will become effective upon signature by the Assistance Secretary for the Office of Energy Efficiency and Renewable Energy in DOE and the President of ASHRAE. It may be modified or amended by written agreement between both parties, and such amendments shall become part of, and shall be attached to this MOU. This MOU shall terminate at the end of three (3) years unless revised or extended at that time by written agreement of the parties. It may be terminated at any time by either party upon 90 days written notice to the other. Its provisions will be reviewed periodically and amended/supplemented if mutually agreed upon in writing.

Kathy Zoi Lynn G. Bellenger Assistant Secretary Energy Efficiency and Renewable Energy U.S. Department of Energy	President, 2010-2011 ASHRAE	
Date	Date	_

EXHIBIT 50



1G Meeting Report June 26, 2004

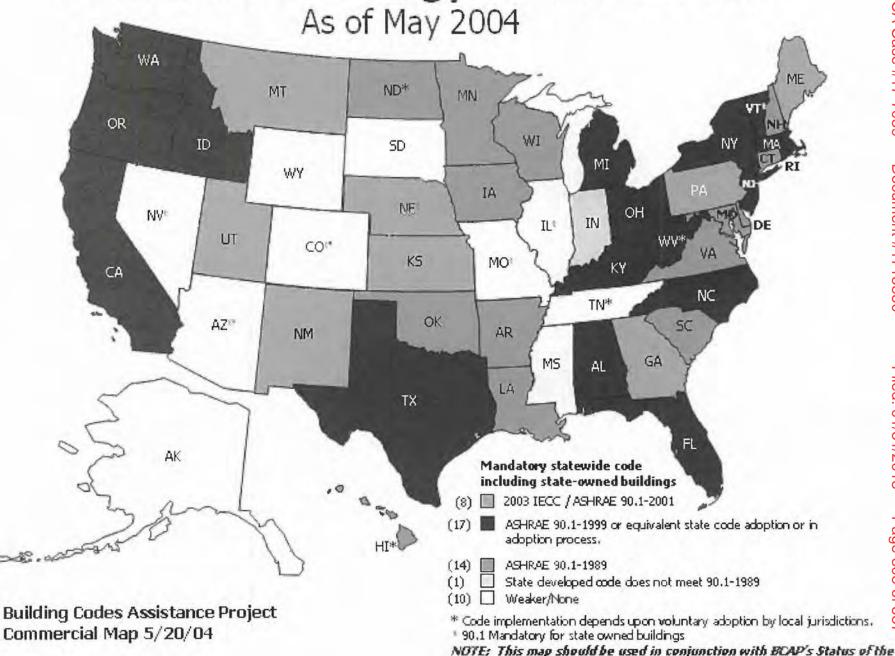
Good News? Bad News? Both?

• Increased number of states using or referencing 90.1

• However, these
"adoptions" and
references are almost
all due to adoption of
the I-codes, not the
direct adoption of

Filed 12/22/15 Page 33 of 97 Filed: 01/31/2018 Page 308 of

Commercial Energy Codes Status



State newsletter. Go to boad-energy.org to view current newsletter.

Other Marketing Issues

- Appreciate free "viewing" on the ASHRAE Cost of the standard remains an issue website

Oustomers versus competitors?

ICC, IECC, NFPA, Advanced Building Guidelines, etc.

What's a standard?

-SP 102 process versus Standards process

Challenges to Adoption

Cost of the Standard

- Revenue objectives are antithetical to widespread adoption Do we participate in the "battles" in the marketplace surrounding use of our product?

- Fighting with our customers?

- Allies or adversaries? Who decides?

Additional Challenges

"Trickle down" adoption approach takes a

lot of time

- If we build it, WILL they come?

Others are building code "products" on a

much faster timeframe

- Can we similarly respond?

Some Recognized Risks

Code proposals to adopt something other than 90.1

-Others are not passive

Code proposals that are more stringent than 90.1

Viewed as a significant risk to our "standing" in the marketplace

Others are not passive

More Recognized Risks

Perceived loss of "balance of interests" on

the committee

- "Perception is reality"?

- Risk to marketplace "standing"?

Impediment to more robust development?

have the right process to support a market ASHRAE has the right experts, do we need or desire?

Additional Challenges

Format and Utility

- Envelope section is nearly un-useable in present format

- Entire format is cumbersome and not customer focused Software version needed to increase ease of

use

Challenges/Opportunities

Training

Need a training and delivery plan to better get our "product" to the marketplace.

Numerous customers for training could aid in adoption

• Engineers (and EITs)

Architects (and architecture students)

Recommendations (Repeated)

Make it free .

Make it beautiful

Make it electronic

Make it easy to demonstrate compliance

Make it easy for code officials to use

Spend \$X on development and \$2X on

marketing

Operational Recommendations

Make sure it is developed in a balanced manner Set specific improvement targets for each round of the standard.

- 10% by 2007? 25% by 2009?

- What are we working toward?

If we set targets, don't let it out the door until we meet them.

- Authority coupled with Responsibility.

New Marketplace Activities

What makes 90.1 meaningful? Why

should a state care?

"No building left behind"

- Build new compliance systems for states

Improved state enforcement under EPAct?

· Penalties for non-compliance?

Teeth?

Paradigm Shift Issues

Decide if we want to continue to live in

this code minimum world

-Should we declare victory and go home?

Is this an appropriate job for ASHRAE?

Should we ride another horse?

- How long will we have our EPAct advantage?

ASHRAE0003509

Mountaintop Question

Do we want to change the world?

f so, are our current actions aligned with this goal? Do we have a business plan aligned with this goal?

EXHIBIT 51

Filed: 01/31/2018—Page 322 of 537

EXHIBIT

From: Ferguson, Steve <SFerguson@ashrae.org>
Sent: Thursday, December 17, 2009 7:27 PM

To: Read, Doug; Colker, Ryan; gholness@comcast.net; Littleton, Jeff;

ron.jarnagin@pnl.gov; Bellenger, Lynn

Cc: Ramspeck, Claire; Reiniche, Stephanie; mschwedler@trane.com; Drake Erbe

Subject: RE: IECC and 90.1

Attachments: FW: comparison document for 90.1 and IECC (1.62 MB)

Is the document in the attached email the comparison document referred to below?

Thanks Steve

From: Read, Doug

Sent: Thursday, December 17, 2009 1:45 PM

To: Colker, Ryan; gholness@comcast.net; Littleton, Jeff; ron.jarnagin@pnl.gov; Bellenger, Lynn Cc: Ramspeck, Claire; Ferguson, Steve; Reiniche, Stephanie; mschwedler@trane.com; Drake Erbe

Subject: RE: IECC and 90.1

I echo Ryan's concerns. I suggest we take a stance and clearly delineate the differences, and differentiate ourselves from the ICEC.. Doug

Doug Read, Program Director of Government Affairs American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

Extension: Fax: 202-833-0118 eMail: DRead@ashrae.org Web: www.ASHRAE.orghttp://www.ashrae.org/

From: Colker, Ryan

Sent: Thursday, December 17, 2009 1:42 PM

To: gholness@comcast.net; Littleton, Jeff; ron.jarnagin@pnl.gov; Bellenger, Lynn

Cc: Ramspeck, Claire; Ferguson, Steve; Reiniche, Stephanie; mschwedler@trane.com; Drake Erbe; Read, Doug

Subject: IECC and 90.1

Folks,

We are seeing some indications from DOE that they are beginning to see the IECC and 90.1 as equivalent (i.e., states can be in compliance if they adopt the IECC without the reference to 90.1). As you can guess, this could have significant impact on the future of 90.1. Of course, there are several considerations as why this is likely not the case (IECC has not undergone the rigorous determination and modeling process of 90.1, IECC is not developed under the ANSI consensus process, etc.). Below are some notes outlining a recent meeting aimed at code adoption organized by BCAP and which includes participation by DOE (I was just made aware of this group and will begin participating).

In my view, we have a couple of options, but their palatability depends on our relationship with ICC and how far we are willing to go:

Case 1:13-cv-01215-TSC Document 122-4 Filed 12/22/15 Page 48 of 97 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 323 of 537

- Send a strongly worded letter to DOE leadership expressing our view (including some of the points above)
- Come out with our own document on how the IECC is not equivalent to 90.1 and why states should continue to utilize 90.1

Please let me know if/how you would like to proceed.

Ryan

Air Support Committee Notes: 12-7-09

Key updates:

FROM DOE:

DOE will publish a side-by-side comparison of ASHRAE 90.1 and the 2009 IECC for commercial buildings. While the report will not specifically state a conclusion - the bottom line is that the two can viewed as EQUIVALENT.

DOE will make money available for training materials and other educational information Rescheck has been updated for '09- no rescheck for IRC.

DOE is trying to get final answer on what states will need to report to illustrate 90% compliance- definitive answer to come.

There will be a new program manager after 1-1-10.

Setting Priorities: Where do we need troops on the ground? - Please continue to communicate your organization's focus to the group. We can HELP! Some organizations have available troops and other resources that have yet to be allocated

- In SE the new year will bring a lot of focus on TN and AL. GA also has a lot of action
- May need help from those with legislative connections in NY, MO, and definitely WV
- There is a need to discuss compliance/enforcement- but this is best done in the new year in a forum outside this committee

Upcoming ACTIONS:

- RECA code guides are on their way (and make excellent holiday gifts)
- NAIMA will put together a map showing where NAIMA's members are located
- Harry will meet with Paul and Eric to update the graph Harry shared earlier this year.
- Monica will take a crack at crafting a one-pager showing how the model code saves money
 Monica will work with others to craft a one-page letter clarifying for states that 90.1 and ASHRAE are equivalent for Recovery Act purposes (I assume this is supposed to say 90.1 and IECC)

Ryan Colker, Manager, Government Affairs American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

Extension: 1116 Fax: 202-833-0118 eMail: RColker@ashrae.org Web: www.ASHRAE.org</br>

EXHIBIT 52





American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

ASHRAE Government Affairs: Technical Expertise to Policymakers

Presentation to ASHRAE CTTC and TC
Albuquerque, New Mexico
June 26, 2010

Doug Read, Program Director, Gov't Affairs



ASHRAE Washington Office 1828 L Street, NW Suite 906 Washington, DC 20036 202-833-1830 www.ashrae.org/advocacy



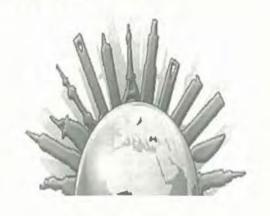


Patricia Ryan, Assistant to the Director, Washington Office



ASHRAE DC Office 2010

- Participation in Coalitions
- Workshops/Symposia
- DOE Fellowship
- > Internship
- Advocacy
- Government Relations Activities





Participation in Coalitions

High Performance Building Congressional Caucus

Coalition (ask your representative to join)

- > Secretariat
- Monthly briefings
- Federal Building Legislation
- > 2030 Coalition signatory (AIA, ICC, USGBC, GBI)
- Zero-Energy Commercial Building Consortium (www.zeroenergycbc.org)
 - Steering Committee Member
 - ASHRAE Co-Chairs Codes and Standards Working Group
 - Response to EISA Sec. 421/422
- Science, Technology, Engineering, and Math (STEM)
 Education Coalition



Participation in Coalitions

- World Standards Day
- Building Community Ad Hocs (climate change, building codes, depreciation, tax credits, federal buildings, Rebuild Haiti, BuildingStar, etc)
- > HVAC Alliance (ACCA, AHRI, HARDI, PHCC)
- Commercial Building Tax Deduction Coalition
- Code Adoption and Enforcement (NASEO, ICC, ASE, BCAP)



Workshops/Symposia/Meetings

Capitol Hill Briefings

- January 28 Facilities Management for Sustainability (IFMA)
- February 4 After the Earthquake: The Role of Buildings and Infrastructure.
- February 25 SBIC Beyond Green Awards Reception & Briefing (SBIC)
- March 23 Insulation and the High-Performance Building (SPFA/PIMA/NAIMA)
- April 24 What's Your Quality of Light? Sustainable Solutions for Human Needs
 and Energy Efficiency (IALD, IES, ALA)
- May 24 Building STAR Legislation: Retrofitting Our Way to Energy Saving and Job

Creation (AHRI, ASHRAE, NEMA)

- June 15 Getting the Whole Picture of High-Performance Buildings (NIBS)
- June 18 The Zero Energy Commercial Buildings Consortium: A Public-Private

Consortium for Zero Energy High Performance Buildings (ASE)

Future: Rating Tools for Green Buildings (GBI)

Can Climate Friendly Buildings be High-Performance (EESI)

Technological Innovations and the Small Business (AHRI/ACCA)

Solar Reflective Roofing (RCMA)

> ASHRAE Presidential Meetings

April 26-28, 2010, DOE, BOMA, USGBC, ASE, AGA, SMACNA

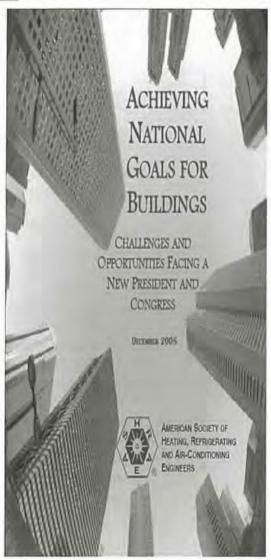


Workshops/Symposia/Meetings

- NIST/BFRL Workshop on International > Engagement
- > Rebuilding America Building Star
- > AGC Meeting on Construction and Climate Change
- NAE Symposium on K-12 Engineering Education
- NEMA Energy Tax Coalition
- Interagency Sustainability Working Group
- ACEEE Briefing on Behaviors for Energy Efficiency

- Interagency Council on Indoor Air Quality
- USGBC Building Performance Initiative Discussion
- GSA Workshop on Federal Building Commissioning





➤ Report to New Congress & President on Buildings

Explanatory Statement on Section 410, Recovery Act (HR1) by National Building Community Stakeholders (November 18, 2009)

Since the passage of the American Recovery and Reinvestment Act (ARRA) in February, 2009, State Energy Program ("SEP") funding tied to building energy code adoption and enforcement has been the subject of much discussion and debate. The objective of this statement is to clarify the intention of the stakute and to offer assistance to state and local governments to advance building energy efficiency codes: including code adoption, training in the operation of the codes and efforts at compliance and enforcement. We recognize that success in this area will not be easy but we have joined logether to help. In an effort to provide accurate, understandable, and actionable information to states, local governments and the organizations and entities that support greater energy efficiency in the built environment, the undersigned groups offer the tollowing information about Sec. 410, of ARRA.

The actual statutory provision is as follows

Section 410 (a) (2)

The State, or the applicable units of local government that have authority to adopt building codes, will implement the following:

(A) A building energy code (or codes) for residential buildings that meets or exceeds the most recently published International Energy Conservation Code, or achieves equivalent or greater energy savings.

(B) A buskling energy code (or codes) for commercial busklings throughout the State that meets or exceeds the ANSI/ASHRAE/IESHA Standard 90.1-2007, or achieves equivalent or greater energy savings.

(C) A plan for the jurisdiction achieving compliance with the bizking energy code or codes described in subparaignaphs (A) and (B) within 8 years of the date of enactment of this Act in at least 90 percent of new and renovated residential and commercial building space. Such plan shall include active training and enforcement programs and measurement of the rate of compliance each year.

Some of the descriptions of this statutory language provided by third parties have resulted in inaccurate information and confusion among those who are involved in meeting the requirements of this Act.

The key points are as follows:

1- Conditions for Acceptance of ARRA funding. All 50 state governors have submitted letters to the Department of Energy, providing assurances that their states would comply with the lemms of Section 410. All 50 states have accepted SEP funds that were conditioned on these assurances. Therefore, all 50 states have committed to do three things:

➤ Explanatory Statement on ARRA and Code Adoption





HIGH-PERFORMANCE BUILDING CONGRESSIONAL CAUCUS COALSTION

Producing High-Perlemence Federal Sulfidings

As Congress involvates apportunities to impact the energy use of Pediatel buildings, the Decuber Consolitios of the High Performence Stabiling Congressional Course Condition (www.hylicox.org) breekinged the following delium aldel. I implementad through upcoming energy laglebeller, will provide an affecti transition to reduced energy consumption, enhanted systemality, trapposed building apposition and meroteococs, and more officiant and of native all recovering in the Todard building stack.

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Begane Botal Building Commissioning for the Entered Building Stock.

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To provide for the training of Federal building personnel, and for other INCHOUSE.

IN THE HOUSE OF REPRESENTATIVES

Mr. CARNADAN introduced the following fell, which was referred to the

A BILL

To provide for the training of Federal building personnel, and for other purposes.

- 1 Be it enacted by the Senate and House of Representa-
- 2 tives of the United States of America in Congress assembled,
- 3 SECTION L SHORT TITLE
- This Act may be cited as the "Federal Buildings Per-
- 5 sound Training Act of 2009".
- 6 REC & TRAINING OF PEDERAL BUTLINNG PERSONNEL.
- (a) IDENTIFICATION OF COME COMPETENCIES.—Not
- 8 later than one year after the date of enactment of this
- 9 Act and annually thereafter, the Administrator of General

HANDLEY NO. 2000 (\$107 p.m.)

► HPBCCC Report on Federal **Building Opportunities**

➤ Legislation to Implement Federal **Building Recommendations**



Congress

- Building and Efficiency Issues in Stimulus Legislation
- Depreciation of HVAC&R Equipment
- Green Jobs Training
- Building Code Enforcement
- Climate Change
- Recommendations on Federal Buildings

Agencies

- Participate in Interagency Sustainability Working group and IAQ working group
- Regular meetings with DOE, EPA and GSA
- GSA meetings on Federal Building Commissioning Guidelines



- Hosted Monthly High Performance Building Roundtable Meetings
- Participated in Monthly ANSI Caucus Lunches at National Press Club
- > Engineering R&D Symposium



Legislation



American Clean Energy and Security Act (H.R. 2454), aka Waxman-Markey

- > Sets nat'l building code energy efficiency targets
 - > 30% on date of enactment; 50% by January 1, 2015 for commercial
 - Uses ASHRAE 90.1-2004 and IECC 2006 as baselines
- ➤ In developing nat'l energy efficiency building code for commercial and residential, USDOE Secretary is to consider ASHRAE standards, IECC, and others
 - ➤ DOE shall provide assistance to "recognized consensus-based code development organizations" to facilitate development
- ➤ EPA Administrator to establish building energy performance labeling program considering existing programs (Energy Star, HERS Index, DOE Programs)
 - > Support development of model labels
 - Utilize incentives to spur use
- > Status: Passed House on 6/26/2009 by vote of 219-212

American Clean Energy Leadership Act (S.1462)

- Introduced by Senator Jeff Bingaman (D-NM)
- Updates nat'l building energy codes & standards at least every 3 years to achieve target energy savings of:
 - > 30% for ASHRAE Standards released during or after 2010 (commercial buildings)
 - > 50% for ASHRAE standards released during or after 2016
 - ➤ A different target year may be set by DOE Secretary if determines target can't be met in 2016
 - If DOE determines ASHRAE's future revised model codes will not meet targets, DOE will propose or establish a modified code or standard that meets the above targets
 - Uses 90.1-2004 as baseline for commercial buildings; IECC 2006 for residential
- Authorizes incentive funds for states that have adopted and is implementing, on a statewide basis, a commercial building code that meets or exceeds ASHRAE 90.1-2007
- > Authorizes \$100 million to carry out the above
- Status: Passed by Senate Energy and Natural Resources Committee on 7/16/2009, currently awaiting consideration on Senate floor

American Power Act

- ▶ Introduced by Senators John Kerry (D-MA) and Joseph Lieberman (ID-CT)
- > Authorizes federal funds to states for the implementation of:
 - ▶ Building codes that improve energy efficiency
 - > Energy-efficient manufactured homes
 - ➤ Building energy performance labeling
 - ➤ Low-income community energy efficiency improvements
 - > Energy efficiency retrofits of existing buildings
- > Status: Introduced in Senate in June, 2010

Practical Energy and Climate Plan (Draft legislation)

- Proposed by Senator Richard Lugar (R-IN)
- Would establish mandatory targets for improved energy efficiency building performance measures for new residential and commercial construction
 - > The program would work with ASHRAE and other organization in developing codes & standards every 3 years, with the following targets:
 - > Commercial energy savings: 30% by 2012, and 50% by 2017
 - > Residential energy savings: 30% by 2012, and 50% by 2015
- DOE would partner with state & local gov'ts to achieve the energy saving codes and standards targets, including offering up to a total of \$300 M per year over the next 5 years. If a state is unable to certify compliance w/these target codes & standards, they will be at a disadvantage for receiving further DOE grants
- Would require all new federal bldgs entering the design phase in 2012 or later to be designed to exceed nat'l blding performance standards
- > DOE would establish new nat'l blding retrofit program

Federal Buildings Personnel Training Act (H.R.5112/S.3250

- ➤ Introduced by Representatives Carnahan (D-MO), Biggert (R-IL), and Norton (D-DC), and Senators Carper (D-DE) and Collins (R-ME)
- Requires the General Service Administration (GSA) to identify the core competencies necessary for federal personnel performing building operations and maintenance, energy management, sustainability, water efficiency, safety, and building performance measures
- ➤ Requires the GSA to work with relevant professional societies, industry associations, and others to develop a recommended curriculum relating to facility management and the operation of high-performance buildings
- Requires GSA to work with relevant professional societies, industry associations, and others to develop a course, certification, degree, license, or registration to demonstrate each core competency, and for ongoing training
- Requires relevant federal personnel to demonstrate competency in the core areas through certification, licensure, etc.
- Requirements of this bill would apply to non-federal personal performing building operations and maintenance, energy management, safety, and design functions under a contract with a federal department or agency





High-Performance Building Congressional Caucus

Co-Chairs

Russ Carnahan (D-MO) Judy Biggert (R-IL)

Members

Tammy Baldwin (D-WI)

Earl Blumenauer (D-OR)

Robert Brady (D-PA)

Ben Chandler (D-KY)

Mike Doyle (D-PA)

David Dreier (R-CA)

Vernon Ehlers (R-MI)

Bill Foster (D-IL)

Gabrielle Giffords (D-AZ) Joe Sestak (D-PA)

Debbie Halvorson (D-IL)

Paul Hodes (D-NH)

Jay Inslee (D-WA)

Steve Kagen (D-WI)

Dennis Kucinich (D-OH)

Dan Lipinski (D-IL)

Dave Loebsack (D-IA)

Zoe Lofgren (D-CA)

Doris Matsui (D-CA)

Betty McCollum (D-MN)

Jim McDermott (D-WA)

Mike McIntyre (D-NC)

Jerry McNerney (D-CA)

Ed Perimutter (D-CO)

Todd Platts (R-PA)

Allyson Schwartz (D-PA)

Edolphus Towns (D-NY)

David Wu (D-OR)

Supporting Coalition Includes



















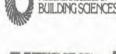




















http://www.hpbccc.org



Development of letters, comments & testimony to Congress and Agencies on pending actions

- > ARRA and Code Adoptions
- **▶ STEM Education**
- ➤ Commercial Building Tax Deduction
- ► EIA Funding
- ➤ Depreciation of HVAC&R Equipment
- ➤ Setting Commercial Equipment Efficiency Standards
- ➤ Building Codes
- ➤ Federal Building Efficiency Standards
- ➤ Smart Grid Interoperability Standards
- School Modernization



Advocacy Tools

- One-page non-technical policy briefs/leave-behinds
 - Based on existing ASHRAE Position Statements
 - Developed through Advocacy Committee with technical review and approval by ExCom
 - Energy Efficiency
 - Climate Change
 - STEM Education
 - Federal R&D Funding
 - Standards
 - Building Energy Data



Advocacy Tools

Government Affairs Updates

- Bi-weekly e-mails featuring government activities of interest
- Sign up at http://www.ashrae.org/advocacy

Advocacy Packets

- Additional licensure requirements
- State TTAA
- Building Codes
- Stimulus Funds (www.ashrae.org/recovery)
- Building Energy Labeling



Advocacy Tools

- Chapter Public Policy Materials
 - CTTC/Washington Office Primer on Government Activities
 - Accompanying PowerPoint Presentation
 - Advocacy Toolkit
 - http://www.ashrae.org/advocacy/page/1262
- Government Affairs Brochure
 - Activities of the ASHRAE Washington Office
 - Available as PDF for distribution to chapter members







Opportunities for Individual Member Participation

- SET Working Group Congressional Visits Day
- Engineering R&D Symposium
- ASHRAE Congressional Briefings
- Forthcoming programs
 - Washington Visitation Program
 - CTTC Chair training programs
- > HPBCCC Congressional Visits Days
- Washington Fellowship
- WISE Program



Additional Washington Office Activities

- Building Energy Quotient Program
 - www.buildingeq.com
- Building Code Adoptions



- Standard 90.1
- Standard 189.1/IGCC Promotion
- Empowering Chapters to Engage State and Local Policymakers



Opportunities for Individual Member Participation

- Contact State and Local Policymakers on Important Issues
 - Building Energy Codes
 - NCEES Masters or Equivalent
 - Stimulus Funds
 - Building Energy Disclosure
 - Use of Voluntary Consensus Standards



ASHRAE/DOE Fellowship



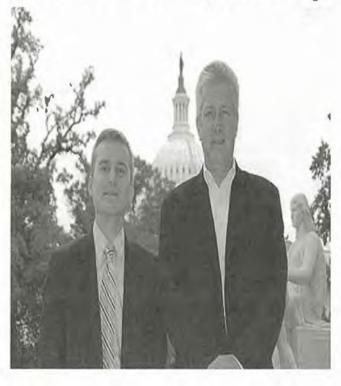
- 2008-2010 Fellow Mike Erbesfeld began in Sen. Dianne Feinstein's Office, moved to DOE in May 2009
- Currently seeking fellows for placement at DOE on codes issues
- > Funding provided by DOE

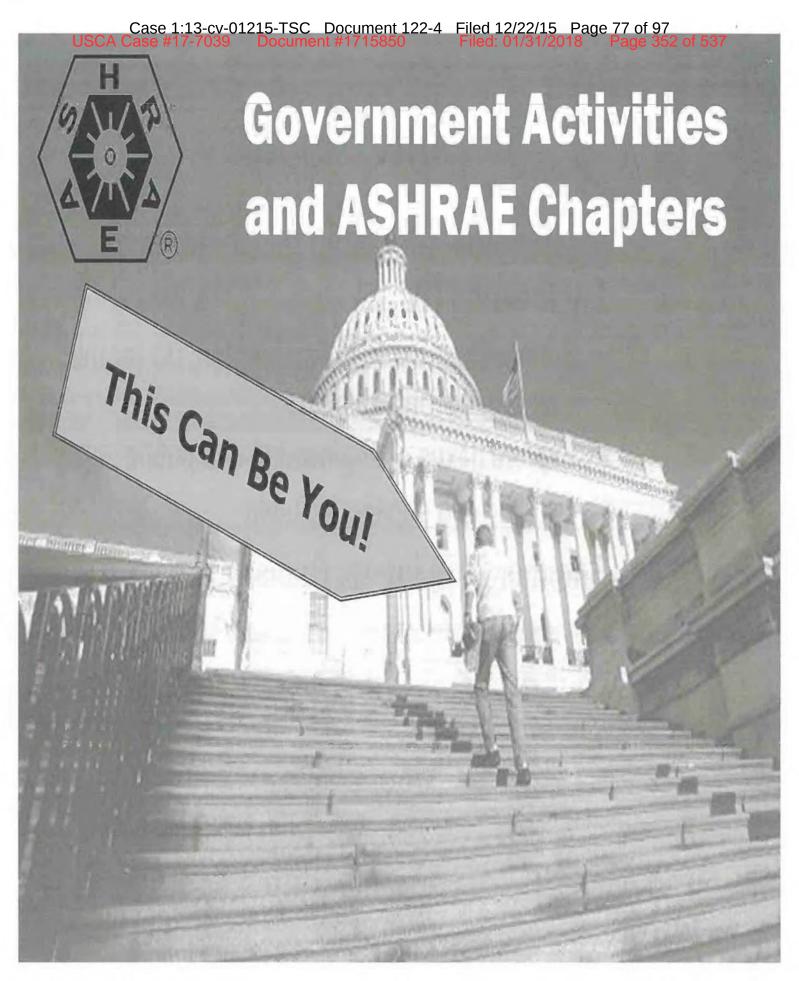


Internship

Washington Internship for Students of Engineering (WISE)

- > Summer Internship in Washington, DC for third year engineering students
- > Explore nexus of engineering and public policy
- Lodging and stipend included
- Summer 2010 intern, Ramsey Brown, CMA







Government Relations Activities

- Build relationships with government officials interested in the built environment
 - Establish ASHRAE as a source for unbiased, technical expertise
 - White House Office of Science & Technology Policy (OSTP)
 - Department of Energy (DOE)
 - Environmental Protection Agency (EPA)
 - General Services Administration (GSA)
 - > U.S. Congress
 - > NIST/FERC—Smart Grid/Demand Response



Advocacy Priorities

- Energy Efficiency
- Climate Change
- Indoor Environmental Quality
- Water Conservation
- STEM Education/Competitiveness



Anticipated Issues

- Energy Efficiency
 - Incentives (tax deductions/credits, depreciation)
 - Continued focus on Building Codes language
 - R&D in needed technologies
 - RPS with efficiency component
 - Building energy disclosure
- Climate Change
 - More cap-and-trade legislation with a little more potential
- Economy
 - Opportunities for buildings



What's Planned for the Remainder of 2010?

- Increase ASHRAE member participation and interest in public policy
- Continue enhancement of ASHRAE Government Affairs webpage (http://www.ashrae.org/advocacy)
- Recruit and place DOE Fellows
- Recruit 2011 WISE Intern
- Develop marketing materials for ASHRAE Government Relations Activities
- Continue participation in relevant coalitions and input to public policy
- Expand ASHRAE's role at the State and local levels

EXHIBIT 73

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FORM FOR COMMENTS ON NFPA REPORT ON PROPOSALS 2000 NOVEMBER ASSOCIATION TECHNICAL MEETING FINAL DATE FOR RECEIPT OF COMMENTS: 5:00 pm EST, MARCH 31, 2000

For further information on the standards-making process, please contact the Codes and Standards Administration at 517-984-7249

For technical assistance, please call NFPA at 617-770-3000

FOR OFFICE USE ONLY	_
Log#: 2	
Date Rec'd:	

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free rights, including nonexclusive, royally-free rights in copyright, in this comme dilection of NFPA in which this comment in this or another similar or analogous to

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ANAChment. 58-107 Log #70

Installation of propane tanks on roofs, brings on a multifaceted problem for the fire service, starting with the fire ground tactics. Approaching a propane tank is an extremely complex problem, accerbated by the situation being on a roof top. The proper compliment of manpower, equipment and water capacity are not the only concerns facing this sort of issue. Rescue, interior attack, and time are of extreme importance. Locating permanent tanks on roofs will have a direct adverse effect on all the issues mentioned. The proper strategy of firefighters will be immensely changed.

The speed required to set up elevated platforms and ladders for an attack on a roof top installation promotes recklessness. Valuable time is wasted, while the fire service is setting up equipment. The fire service is dedicated to responding to all types of dangers. However, placing firefighters on a roof, with no escape route is against everything learned in Hazardous Materials Training.

Propane is heavier than air. The approach of the fire service will obviously be lower than what the tank is. Firefighters will be required to go through the hazard to get to the problem. Once again, this is against everything learned in Hazardous Materials Training. There is no viable approach to a leaking tank on a roof.

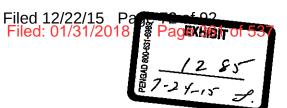
In researching the NFPA guidelines, I could not find one document that spoke to propose leaks or fires located on roofs. It take this to mean that no information is together that the fire service can use to attack a tank located on a roof. Tactics have been written, researched, and papers written on above ground tanks, underground tanks and even tanker trucks. Nothing addresses the issue of an attack on roof top installations. Having no measure to go by, gives the fire service nothing to turn to for information. The lack of information alone millifies the use of LP storage tanks on roof tops.

A propane tank on fire on a roof top, is a situation that no fire department wishes to contend with Firefighters have the commitment of rescue in buildings. That commitment will be shortened due to the grave danger of the firemen and equipment. An interior attack would be accessed on minute by minute situation. Having a BLEVE over the heads of emergency responders would be a nightmare.

The incident of having to rescue firefighters on a roof that have been hurt during a BLEVE would be to the point of being totally unmanageable to handle. The involvement would introduce risks beyond what any firefighter should face.

3-14-2008 Westy W. Hayn

EXHIBIT 77



Approved 28 April 1999

INTELLECTUAL PROPERTY POLICY OF ASTM

I. <u>INTRODUCTION.</u>

- A. Section 1 of the ASTM Charter states in part: "The corporation is formed for the development of standards on characteristics and performance of materials, products, systems and services; and the promotion of related knowledge."
- B. By-law 4.4 states: "The Board shall delegate to such committees and other groups those powers necessary for the fulfillment of their assigned function."
- C. By-law 7.1 states: "The Board of Directors is empowered to promulgate procedures for the development and adoption of voluntary consensus standards ...".
- D. The Standing Committee on Publications advises the Board of Directors on the formulation of publications policy. The Committee is responsible for the publications program of the Society except the acceptance for publication of ASTM's standards. "The Committee administers the Society's publications program ..."
- E. The Committee on Technical Committee Operations ("COTCO") is responsible for the Regulations Governing ASTM's Technical Committees 18.1, which state: "Documents [including standards and provisional standards], technical papers, reports, minutes, letters to the editor, and related materials should be released for publication only through ASTM's Headquarters."

Case 1:13-cv-01215-TSC Document 122-5 Filed 12/22/15 Page 73 of 92 JSCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 362 of 537

F. The Committee on Standards is responsible for the manual, "Form and Style for ASTM Standards." Regulation 10.7 of the Regulations Governing ASTM Technical Committees requires the current edition of Form and Style for ASTM Standards shall be followed in the writing of standards. Section F of that manual covers policies and procedures governing reference to patents, trademarks, similar marks, and reference to standards of other organizations in ASTM Documents.

II. TYPES OF INTELLECTUAL PROPERTY.

Intellectual property includes patents, trademarks, copyrights and trade secrets, as defined in various federal and state statutes.

- A. Patent. A patent is a property right granted by the government to individuals who invent new and useful inventions. Patents may be granted on any new and useful process, machine, manufactured article, composition of matter, or any new and useful improvements thereof. During a patent's limited term, its owner has the right to exclude others from making, using, selling, offering for sale or importing the patented invention into the United States.
- B. Copyright. A copyright is a property right granted to the creators (i.e. authors) of original works which are fixed in a tangible medium of expression and which are independently created and possess some minimal degree of creativity. The exclusive rights provided by a copyright include protection against unauthorized printing, publishing, copying, selling, distributing, and/or performing of the copyrighted work. Copyrighted materials include not only traditional written works but also such things as computer software, electronic files and publications,

internet/website files and publications, multimedia, CD-ROM's, videotapes, audiotapes, and training programs.

C. <u>Trademark.</u> A trademark is either a word, phrase, symbol or design, or combination of words, phrases, symbols or designs, which identifies and distinguishes the source of goods or services from one party from those of others. A service mark is the same as a trademark except it identifies and distinguishes the source of a service rather than a product. Trademark rights may be used to prevent others from using a confusingly similar mark but not to prevent others from making the same goods or from selling them under a non-confusing mark.

III. PURPOSE OF THIS POLICY.

The purpose of this policy is to specify and protect the interests of ASTM in its intellectual property rights, and to describe the means by which ASTM has addressed protection of its rights and recognition of the intellectual property rights of others. ASTM's intellectual property rights, and the revenue generated by utilization of those rights, enables ASTM to carry out its mission.

All ASTM staff, members, and others as given in IV.B below are expected to comply with this policy.

IV. SCOPE.

A. This policy applies to any ASTM standard, draft standard, or related document defined in Regulation 2 of the Regulations Governing ASTM Technical Committees, as well as to all other ASTM publications and related property, in all forms (including CD-ROM, software, multimedia, ASTM Internet Web Site, videotapes, audiotapes, and written), such as Special Technical Publications, Manuals, Technical Journals, Proficiency Test Program materials, Professional and

Technical Training materials, and Logos (collectively referred to here as "ASTM Intellectual Property"). (Many of these, as well as other examples of ASTM Intellectual Property, are listed in the ASTM Publications Catalog and related brochures. Logos are specifically covered by the ASTM Logo Policy as adopted by the ASTM Board on 15 October 1998.)

B. This policy applies to all employees, members, officers, directors, participants, and others involved with the development, adoption, publication, and/or distribution of ASTM Intellectual Property.

V. POLICY.

- A. All of ASTM's Intellectual Property rights must be protected, regulated and maintained, no matter how wide the information is distributed in print, electronically, or otherwise.
- B. ASTM's owns and maintains the rights to its Intellectual Property.
- C. ASTM reserves the right to copyright any of its print, electronic products, databases, audio/visual products and any other subject matter covered by the Copyright Act. This is intended to protect ASTM and its members from unauthorized copying and distribution of ASTM Intellectual Property.
- D. By participating in any ASTM technical committee and/or participating in the creation and adoption of ASTM's Intellectual Property, participants and committee members acknowledge that the copyright to such Intellectual Property resides in ASTM. Such participants and committee members agree, if necessary,

to execute any and all documents deemed necessary or appropriate by ASTM to transfer and effectuate ownership of all such rights, including but not limited to copyrights, they may have in ASTM Intellectual Property.

- E. All participants in the creation of ASTM Intellectual Property agree to abide by the ASTM Charter, By-laws, Regulations Governing ASTM Technical Committees, and Form and Style for ASTM Standards, as well as this Policy, as may be amended from time to time.
- F. Individuals who participate in ASTM technical committees and related activities may, from time to time, where appropriate, be required to sign an agreement acknowledging the transfer of any rights in ASTM Intellectual Property to ASTM. The rights granted to ASTM by this assignment shall belong to ASTM in perpetuity.
- G. It is ASTM policy that the copyrights and other intellectual property rights of third parties be respected and not infringed by ASTM or any of its committees, or any employee, member or other person acting on behalf of ASTM.
- H. Electronic Networks.
 - The Copyright Act provides copyright protection for certain works fixed in any tangible medium expression, now or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of technology.

2. As more and more sophisticated technology becomes available, it may become increasingly difficult to determine and enforce ownership of ASTM Intellectual Property rights. Therefore, inputting, uploading, downloading, reproducing, or transmitting ASTM Intellectual Property without ASTM's prior written permission is prohibited, with the exception that ASTM is not intending to limit the applicability of the "fair use" doctrine developed under the Copyright Act.

VI. PROCEDURE.

- Intellectual Property -- Standards.
 - Standards and related documents developed by ASTM committees are copyrighted by ASTM as a "Work for Hire" as given in the U.S. Copyright Act. When an individual accepts appointment to a committee, the individual may also be asked to acknowledge that copyrights and all rights to all materials produced by ASTM committees are owned by ASTM and that ASTM may register the copyright in its own name.
 - 2. If, in developing a standard or related document, a committee proposes to incorporate material from the copyrighted publication of another organization, the committee should request ASTM staff to obtain written permission from the publisher to reprint the material. Reference to a patented item should be avoided, but the ASTM patent policy (F3 of Form and Style for ASTM Standards) must be complied with. Regulations Governing ASTM Technical Committees, Form and Style for ASTM Standards (including but not limited to F3, F4 and F5), and ASTM staff should be consulted for guidelines if patented items are to be referenced in a standard or document.

- ASTM standards may currently include copyrighted material reproduced under agreement with the copyright holder. Similarly, ASTM may permit others to reprint its material based on appropriate license agreements.
- 4. The provision stated in A.3 (above) apply to all forms, including, for example, both hard copy and electronic media.
- 5. ASTM registers its trademarks and service marks in the United States and in countries around the world. As a condition for membership, members agree that the marks are the property of ASTM at all times.
- Guidance to committees on protection of ASTM's Intellectual Property rights
 and avoidance of infringement of the rights of others is provided by the ASTM
 staff.
- B. Intellectual Property Other Than Standards
 - 1. ASTM recognizes different ways to assign intellectual property rights:
 - a) When individual authors submit manuscripts for technical papers for publication by ASTM in an ASTM Special Technical Publication or ASTM Technical Journal, the author must sign an agreement whereby ownership of the material is assigned to ASTM. However, if the technical paper was prepared in the course of the author's employment by the U.S., Canadian, or British Governments, ASTM acknowledges that copyright does not exist.

- b) When ASTM contracts, subsidizes, or agrees with writers, authors, editors, or others to prepare or otherwise help create ASTM Intellectual Property other than technical papers as given in 1a above, a "Work for Hire" agreement must be signed in which copyright is assigned to ASTM. Copyright shall be granted and assigned exclusively to ASTM, including any and all rights protected by the Copyright Laws of the United States and all other countries as set forth in the respective agreement.
- 2. When ASTM creates and distributes its Intellectual Property, ASTM may do so in whatever manner it decides. This will not, however, preclude the use of the Intellectual Property by authors and editors as set forth in the applicable agreements given in 1a and 1b above.
- 3. ASTM will take reasonable precautions to preserve the property rights of an author of a manuscript not accepted for publication by ASTM.
- C. Licensing -- ASTM requires any individual or entity who desires to copy, reproduce, market, or distribute any of ASTM's Intellectual Property (e.g. Standards, Draft Standards, Technical Papers, Manuals, Software, Training Course Materials, Logos) to execute an appropriate ASTM License Agreement. Such agreements will normally require, among other things, that licensees not modify the ASTM property and to make appropriate copyright acknowledgments and royalty payments. ASTM has no obligation to execute such agreements.

Adopted by the ASTM Board of Directors, 28 April 1999

EXHIBIT 78

Page 81 Filed: 01/31/2018

Originally Approved 28 April 1999

INTELLECTUAL PROPERTY POLICY OF ASTM INTERNATIONAL ("POLICY")

- I. INTRODUCTION. Ownership and use of ASTM's Intellectual Property is vital to the ability of ASTM to fulfill its mission. ASTM owns and maintains the rights to its Intellectual Property; it is the responsibility of ASTM's Board of Directors ("Board"), staff, members, participants and authorized resellers/distributors to protect these valuable assets and ensure that they are used in accordance with this Policy.
- A. Section 1 of the ASTM Charter states in part: "The corporation is formed for the development of standards on characteristics and performance of materials, products, systems and services; and the promotion of related knowledge."
- B. ASTM By-law 4.4 states: "The Board shall delegate to such committees and other groups those powers necessary for the fulfillment of their assigned function."
- C. By-law 7.1 states: "The Board of Directors is empowered to promulgate procedures for the development and adoption of voluntary consensus standards ..."
- D. The Standing Committee on Publications ("COP") advises the Board on the formulation of publications policy. COP is responsible for the publications program of the Society except the acceptance for publication of ASTM's standards. "The Committee administers the Society's publications program ..."
- E. The Committee on Technical Committee Operations ("COTCO") is responsible for the Regulations Governing ASTM's Technical Committees ("Regulations"), of which 17.1, states: "Documents [including standards and provisional standards], technical papers, reports, minutes, letters to the editor, and related materials should be released for publication only through ASTM's Headquarters." Regulation 15 governs the use or reference to a patent in an ASTM standard.
- F. The Committee on Standards ("COS") is responsible for the manual, Form and Style for ASTM Standards ("Form and Style"). Regulation 10.7 requires the current edition of Form and Style shall be followed in the writing of standards. Section F of that manual sets forth policies and procedures governing reference to patents, trademarks, similar marks, and reference to standards of other organizations in ASTM documents.

II. TYPES OF INTELLECTUAL PROPERTY.

Intellectual property includes patents, trademarks, and copyrights and trade secrets, as defined in various federal and state statutes.

- A. Patent. A patent is a property right granted by the government to individuals who invent new and useful inventions. Patents may be granted on any new and useful process, machine, manufactured article, composition of matter, or any new and useful improvements thereof. During a patent's limited term, its owner has the right to exclude others from making, using, selling, offering for sale or importing the patented invention into the United States.
- B. Copyright. A copyright is a property right granted to the creators (i.e. authors) of original works which are fixed in a tangible medium of expression and which are independently created and possess some minimal degree of creativity. The exclusive rights provided by a copyright include protection against unauthorized printing, publishing, copying, selling, distributing, and/or performing of the copyrighted work. Copyrighted materials include not only traditional written works but also such things as computer

JA1612 ASTM003445 software, electronic files and publications, internet/website files and publications, multimedia, CD-ROM's, videotapes, audiotapes, and training programs.

C. Trademark. A trademark is either a word, phrase, symbol or design, or combination of words, phrases, symbols or designs, which identifies and distinguishes the source of goods or services from one party from those of others. A service mark is the same as a trademark except it identifies and distinguishes the source of a service rather than a product. Trademark rights may be used to prevent others from using a confusingly similar mark but not to prevent others from making the same goods or from selling them under a non-confusing mark.

III. PURPOSE OF THIS POLICY.

The purpose of this Policy is to specify and protect the interests of ASTM in its intellectual property rights, and to describe the means by which ASTM has addressed protection of its rights and recognition of the intellectual property rights of others. ASTM's intellectual property rights and revenue generated by utilization of those rights enables ASTM to carry out its mission. All ASTM staff, members and others as given in IV.B, below, are expected to comply with this Policy.

IV. SCOPE.

- A. This Policy applies to any ASTM standard, draft standard or related document defined in *Regulation 2* (and any adjuncts to such standard or document), as well as to all other ASTM publications and related intellectual property, in all forms (including CD-ROM, software, multimedia, ASTM Internet Web Site, videotapes, audiotapes, and written), such as Special Technical Publications, Manuals, Technical Journals, Proficiency Test Program materials, Professional and Technical Training materials, as well as use of trademarks, service marks and Logos (collectively referred to here as "ASTM Intellectual Property"). (Many of these, as well as other examples of ASTM Intellectual Property, are listed in the ASTM Publications Catalog and related brochures. Logos are specifically covered by the *ASTM Logo Policy* as adopted by the ASTM Board on October 15, 1998.)
- B. This Policy applies to all employees, members, officers, directors, participants, authorized resellers/distributors and others involved with the development, adoption, publication, use and/or distribution of ASTM Intellectual Property. For purposes of this Policy, "committee" or "technical committee" includes sub-committees and task groups.
- C. Participants, members and authorized resellers/distributors acknowledge and agree that the adoption, enactment, reference, or incorporation of any of the ASTM Intellectual Property by any government or agency has not and will not effect, transfer, modify or alter the copyrights of the ASTM Intellectual Property in any way.

V. POLICY.

- A. All of ASTM's Intellectual Property rights must be protected, regulated and maintained, no matter how wide the information is distributed in print, electronically, or otherwise. Such protection is essential to ASTM's ability to fulfill its mission.
 - B. ASTM's owns and maintains the rights to its Intellectual Property.
- C. ASTM reserves the right to copyright any of its print, electronic products, databases, audio/visual products and any other subject matter covered by the Copyright Act. This is intended to protect ASTM and its members from unauthorized copying and distribution of ASTM Intellectual Property.

- D. By participating in any ASTM technical committee and/or participating in the creation, development and/or adoption of ASTM's Intellectual Property, participants and committee members acknowledge that the copyright to such Intellectual Property resides in ASTM. Such participants and committee members agree if requested by ASTM, to execute any and all documents deemed necessary or appropriate by ASTM to transfer and effectuate ownership of all such rights, including but not limited to copyrights, they may possibly have in ASTM Intellectual Property. The rights granted to ASTM by this assignment or transfer shall belong to ASTM in perpetuity.
- E. All participants, members and staff agree to abide by and follow the requirements of the ASTM Charter, By-laws, Logo Policy, Regulations Governing ASTM Technical Committees, and Form and Style for ASTM Standards, as well as this Policy, as each may be amended from time to time, when creating, developing or utilizing ASTM Intellectual Property.
- F. It is ASTM policy that the copyrights and other intellectual property rights of third parties be respected and not infringed by ASTM or any of its committees, or any employee, member or other person acting on behalf of ASTM.
- G. It is ASTM policy that, if at all possible, proprietary and/or patented equipment, apparatus, material or information not be included in a standard. If such inclusion is necessary, By-law 15 must be complied with.
- H. ASTM registers its trademarks and service marks in the United States and in countries around the world. As a condition for membership, members agree that the marks are the property of ASTM at all times. Use of the marks is subject to, among other things, ASTM's Logo Policy.

I. Electronic Networks.

- 1. The Copyright Act provides copyright protection for certain works fixed in any tangible medium expression, now or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of technology.
- 2. As more and more sophisticated technology becomes available, it may become increasingly difficult to determine and enforce ownership of ASTM Intellectual Property rights. Therefore, inputting, uploading, downloading, reproducing, or transmitting ASTM Intellectual Property without ASTM's prior written permission is prohibited.

VI. PROCEDURE.

A. Intellectual Property - Standards.

- 1. Standards and related documents developed by or for ASTM committees are copyrighted by ASTM as set forth in the U.S. Copyright Act. When an individual or entity joins, volunteers for or accepts appointment to the Society or a committee, the individual or entity, as a condition of membership and participation, expressly acknowledges and agrees that copyrights and all rights to all materials produced by or for ASTM committees are owned by ASTM and that ASTM will register the copyright in its own name.
- 2. If, in developing a standard, other document or adjuncts to such standards or documents, a committee proposes to incorporate material from the copyrighted publication of another organization, the committee should request ASTM staff to obtain written permission from the publisher copyright holder to reprint the material. Reference to a patented item should be avoided if at all possible, but in all cases the ASTM Patent Policy (By-law 15) and F3 of Form and Style for ASTM Standards must be complied with. Regulations Governing ASTM Technical Committees, Form and Style for ASTM Standards (including but not limited to F3, F4 and F5), and ASTM staff should be consulted for guidance if patented items or trade/service marks are to be referenced in a standard or document.
 - 3. ASTM standards may currently include copyrighted material reproduced under

JA1614 ASTM003447

agreement with the copyright holder. Similarly, ASTM may permit others to reprint its material based on appropriate license agreements. F3 of *Form and Style* must be followed when referencing standards of other organizations.

- 4. The provision stated in A.3 (above) applies to all forms of media, including, for example, both hard copy and electronic formats.
- 5. Guidance to committees and members on protection of ASTM's Intellectual Property rights and avoidance of infringement of the rights of others is provided by the ASTM staff.
- 6. Only [an officer] of ASTM can grant permission for the use, copying or distribution of ASTM Intellectual Property by others. Any requests for such permission must be forwarded to ASTM staff for consideration and further action.

B. Intellectual Property Other Than Standards

- 1. ASTM recognizes different ways to assign intellectual property rights:
- a) When individual authors submit manuscripts for technical papers for publication by ASTM in an ASTM Special Technical Publication or ASTM Journal, the author must sign an agreement (Author Agreement) whereby ownership of the material is assigned to ASTM. However, if the technical paper was prepared in the course of the author's employment by the U.S., Canadian, or British Governments, ASTM acknowledges that copyright does not exist.
- b) When ASTM contracts, subsidizes, or agrees with writers, authors, editors, or others to prepare or otherwise help create ASTM Intellectual Property other than technical papers as given in 1a above, a "Work for Hire" Agreement must be signed in which copyright is acknowledged to reside in ASTM or will be assigned to ASTM. Copyright shall be granted and/or assigned exclusively to ASTM, including any and all rights protected by the Copyright laws of the United States and all other countries as set forth in the respective agreement.
- 2. When ASTM creates and distributes its Intellectual Property, ASTM may do so in whatever manner it decides. This will not, however, preclude the use of the Intellectual Property by authors and editors as set forth in the applicable agreements described in 1a and 1b above.
- 3. ASTM will take reasonable precautions to preserve the property rights of an author of a manuscript submitted but not accepted for publication by ASTM.
- C. Licensing. ASTM may, at its sole discretion, assign, license or permit the use by others of its Intellectual Property. ASTM requires any individual or entity who desires to copy, reproduce, market, create a derivative work utilizing or distribute any of ASTM's Intellectual Property (e.g. Standards, Draft Standards, Adjuncts, Technical Papers, Research Reports, Manuals, Software, Training Course Materials, Logos) to execute an appropriate ASTM License Agreement. Such agreements will normally require, among other things, that licensees not modify the ASTM Intellectual Property and to make appropriate copyright acknowledgments and royalty payments. ASTM has no obligation to execute such agreements.

As amended	hv the	ASTM Board	of Directors.	2003.

EXHIBIT 79

Originally Approved 28 April 1999

INTELLECTUAL PROPERTY POLICY OF ASTM **INTERNATIONAL ("POLICY")**

- I. INTRODUCTION. Ownership and use of ASTM International's Intellectual Property (e.g. Standards, Draft Standards, Adjuncts, Certification Programs and related materials, Technical Papers, Research Reports, Manuals, Software, Training Course Materials and Logos collectively referred to as "ASTM IP") are vital to the ability of ASTM International to fulfill its mission. ASTM International owns and maintains the rights to its Intellectual Property; it is the responsibility of ASTM International's Board of Directors ("Board"), staff, members, and others who participate in the creation of ASTM IP (collectively "Participants"), as well as authorized resellers/distributors of ASTM IP, to protect these valuable assets and ensure that they are used in accordance with this Policy.
- A. Section 1 of the ASTM International Charter states in part: "The corporation is formed for the development of standards on characteristics and performance of materials, products, systems and services; and the promotion of related knowledge." Section 9 of the Charter also states, in part: "...the Corporation shall not engage in any activity which is not educational, technical, scientific or charitable..."
- B. ASTM International By-law 4.4 states: "The Board shall delegate to such committees and other groups those powers necessary for the fulfillment of their assigned function."
- C. ASTM International By-law 7.1 states: "The Board of Directors is empowered to promulgate procedures for the development and adoption of voluntary consensus standards ..."
- D. The Standing Committee on Publications ("COP") advises the Board on the formulation of publications policy. COP is responsible for all publications programs of the Society except the acceptance for publication of ASTM International's standards.
- E. The Committee on Technical Committee Operations ("COTCO") is responsible for the Regulations Governing ASTM's Technical Committees ("Regulations"), of which Regulation 17.1 states: "Documents [including standards and provisional standards], technical papers, reports, minutes, letters to the editor, and related materials should be released for publication only through ASTM's headquarters."
- F. Regulation 10.7 requires that the current edition of the manual. Form and Style for ASTM Standards ("Form & Style") will be followed in the writing of standards (the Committee on Standards ("COS") is responsible for Form & Style). Section F of Form & Style sets forth policies and procedures governing, among other matters, reference to patents, trademarks, similar marks, and reference to standards of other organizations, in ASTM International documents. Regulation 15 governs the use or reference to a patent in an ASTM International standard.

II. TYPES OF INTELLECTUAL PROPERTY.

Intellectual property includes patents, trademarks and copyrights, as defined in various federal and state statutes.

A. Patent. A patent is a property right granted by the government to inventors of new and useful inventions. Patents may be granted on any new and useful process, machine, manufactured article, composition of matter, or any new and useful improvements thereof. During a patent's limited term, its owner has the right to exclude others from making, using, selling, offering for sale or importing the patented invention into the United States.

- B. Copyright. A copyright is a property right granted to the creators (i.e. authors) of original works that are fixed in a tangible medium of expression and that are independently created and possess some minimal degree of creativity. The exclusive rights provided by a copyright include protection against unauthorized printing, publishing, copying, selling, distributing, and/or performing of the copyrighted work. Copyrighted materials include not only traditional written works but also such things as computer software, electronic files and publications, internet/website files and publications, multimedia, CD-ROMs, DVDs, videotapes, audiotapes, and training programs.
- C. Trademark. A trademark is a word, phrase, symbol or design, or combination of words, phrases, symbols or designs, which identifies and distinguishes the source of goods or services from one party from those of others. A service mark is the same as a trademark except it identifies and distinguishes the source of a service rather than a product. Trademark rights may be used to prevent others from using a confusingly similar mark but not to prevent others from making the same goods or from selling them under a non-confusing mark.

III. PURPOSE OF THIS POLICY.

The purpose of this Policy is to specify and protect the interests of ASTM International in its Intellectual Property rights, and to describe the means by which ASTM International has addressed protection of these rights and recognition of the intellectual property rights of others. ASTM International's Intellectual Property rights and revenue generated by utilization of those rights enable ASTM International to carry out its mission. All ASTM International staff, members, and others as stated in IV.B, below, are expected to comply with this Policy.

IV. SCOPE.

A. This Policy applies to any ASTM International standard, draft standard or related document (hereinafter referred to as "ASTM Documents")defined in Regulation 2 of the Regulations Governing ASTM Technical Committees, and any adjuncts to such ASTM Documents, as well as to all other ASTM International publications and related property, in all forms (including CD-ROM, software, multimedia, ASTM Internet Web Site, videotapes, audiotapes) and written materials such as Certification Programs and materials, Special Technical Publications, Manuals, Technical Journals, Proficiency Test Program materials, Professional and Technical Training materials, as well as use of trademarks, service marks, certification marks and Logos (collectively part of ASTM IP). (Many of these, as well as other examples of ASTM IP, are listed in the ASTM International Publications Catalog and related brochures. Logos are specifically covered by the ASTM International Logo Policy as adopted and amended by the Board.)

B. This Policy applies to all ASTM International employees, members, officers, directors, Participants, resellers/distributors and others involved with the development, adoption, publication, use and/or distribution of ASTM IP. For purposes of this Policy, "committee" or "technical committee" includes subcommittees and task groups.

C. Participants, members, and authorized resellers/distributors acknowledge and agree that the adoption, enactment, reference, or incorporation of any of the ASTM IP by any government or agency has not and will not effect, transfer, modify or alter the copyrights of the ASTM IP in any way.

V. POLICY.

A. All of ASTM International's Intellectual Property rights must be protected, regulated and maintained, no matter how wide the information is distributed in print, electronically, or otherwise. Such protection is essential to ASTM International's ability to fulfill its mission and maintain its Intellectual Property. The Board of Directors has approved the <u>Principles for the Use of ASTM Intellectual Property by Other Standards Organizations</u>.

- B. ASTM International owns and maintains the rights to its Intellectual Property.
- C. ASTM International reserves the right to copyright any of its print, electronic products, databases, audio/visual products and any other subject matter covered by Copyright (pursuant to the US Copyright Act and International Copyright law). This is intended to protect ASTM International and its members from unauthorized copying and distribution of ASTM IP.
- **D.** By participating in any ASTM International technical committee and/or participating in the creation, development and/or adoption of ASTM IP, Participants and committee members acknowledge that the copyright to such Intellectual Property resides in ASTM International. Each member agrees, by such participation and enjoyment of his/her annual membership benefits, to have transferred any and all ownership interest, including copyright, they possess or may posses in the ASTM IP to ASTM. If requested by ASTM International, such Participants and committee members agree to execute any and all documents deemed necessary or appropriate by ASTM International to transfer and effectuate ownership of all such rights, including but not limited to copyrights, they may possibly have in ASTM IP. The rights granted to ASTM International by this assignment or transfer shall belong to ASTM International in perpetuity.
- **E.** All Participants, members and staff agree to abide by and follow the requirements of the ASTM International Charter, ASTM International By-laws, Regulations Governing ASTM Technical Committees, and Form and Style for ASTM Standards, ASTM International Logo Policy, as well as this Policy, as each may be amended from time to time, when creating, developing or utilizing ASTM IP.
- **F.** It is ASTM International's policy, reflected in **Form & Style F5**, that the copyrights and other intellectual property rights of third parties be respected and not infringed by ASTM International or any of its committees, or any employee, member or other person acting on behalf of ASTM International.
- G. It is ASTM International policy that, if at all possible, proprietary and/or patented equipment, apparatus, material or information not be included in a standard. If such inclusion is necessary, ASTM International's Patent Policy (Regulation 15) must be complied with.
- **H.** ASTM International registers its trademarks and service marks in the United States and in countries around the world. As a condition of membership, members agree that the marks are the property of ASTM International at all times. Use of the marks is subject to, among other things, ASTM International's Logo Policy.

I. Electronic Networks.

- 1. The US Copyright Act (as well as International Copyright law) provides copyright protection for certain works fixed in any tangible medium expression, now or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of technology.
- 2. As more and more sophisticated technology becomes available, it may become increasingly difficult to determine and enforce ownership of ASTM International's Intellectual Property rights; therefore, inputting, uploading, downloading, reproducing, or transmitting ASTM IP without ASTM International's prior permission (or in conformity with ASTM International's applicable License Agreements) is prohibited.

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VI. PROCEDURE.

A. Intellectual Property -- Standards.

- 1. Standards and related documents developed by or for ASTM International committees are copyrighted by ASTM International, as set forth in the U.S. Copyright Act. When an individual or entity joins, volunteers for or accepts appointment to the ASTM International or an ASTM International committee, the individual or entity, as a condition of membership and participation, expressly acknowledges and agrees that copyrights and all rights to all materials produced by or for ASTM International committees are owned by ASTM International and that ASTM International will register the copyright and hold all intellectual property rights in its own name.
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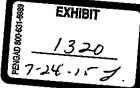
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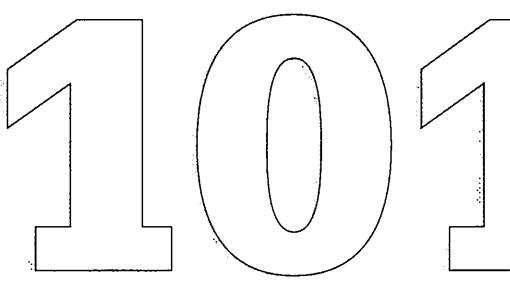
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As amended by the ASTM International Board of Directors, October 28, 2003 and April 13, 2010

Case 1:13-cv-01215-TSC Document 122-5 Filed 12/22/15 Page 91 of 92 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 380 of 537

EXHIBIT 95





NEW STANDARDS

/by Felicia Quinzi/

YOUR INDUSTRY OR SERVICE SECTOR

NEEDS A NEW STANDARD, BUT

WHERE DO YOU BEGIN TO

GET IT WRITTEN AND

APPROVED?

READ ON.

riting a new standard can seem a daunting task, especially if you have never before thought of yourself as an author. However, ASTM, a consensus organization that wholly promotes

collaborative efforts, offers many tools to get you started and see you through until the end or, at least, until someone votes negative.

ToolBox

"Search for Individual Standards" Page: To find out if a standard is already developed in the area you want, go to www.astm.org (click on the <u>ASTM Store</u>, then on <u>Search for Individual Standards</u> and do a keyword search).

"Request for the Development of a New Standard" Form: Go to www.astm.org (click on <u>Technical Committees/Membership</u>, then on <u>Standards Development Tools</u>) or contact your staff manager.

Form and Style for ASTM Standards: Go to www.astm.org (click on Technical Committees/Membership, then on Standards Development Tools) or contact your staff manager.

Interactive Standards Development Forums: To develop standards online, see the ASTM Forums Web page (http://astmforums20.micronexx.com).

WHAT YOU WILL NEED:

- New Standard Development request form (Figure 1, see page 22);
- Form and Style for ASTM Standards, a.k.a. the "Blue Book":
- Input from other experts;
- Access to the Internet (optional);
- Instructions for establishing an interactive forum on the ASTM Web site (optional);
- Your staff manager;
- A No. 2 pencil or a PC;
- A comfortable chair;
- Patience.

HOW GOOD IS MY IDEA?

The first step is to introduce the idea for a new standard to the appropriate subcommittee. The concept must fall under the subcommittee's scope, first and foremost. The subcommittee should agree that the proposed activity is worthwhile, feasible, and needed. More importantly, verify that the standard you hope to write does not already exist under the jurisdiction of another committee or organization. Avoid duplication of effort and jurisdictional disputes!

To do this, do a keyword search of all approved ASTM standards on the ASTM Web site (see "Search for Individual Standards" in the ToolBox). If a standard turns up that sounds similar to the one you are about to write, contact your staff manager for further information. In addition, your staff manager can assist in finding out whether your or another committee has a work in progress on a similar or related subject by searching draft standards under development in ASTM.

ndards under development. NEW STANDARD DEVELOPMENT

The best way to ensure that an activity is appropriate is to complete the "Request for the Development of a New Standard" form (see ToolBox).

The subcommittee having jurisdiction over the proposed project

should approve the development of the activity and the subcommittee chairman should subsequently sign the form. If you are between meetings, the chairman may sign the form on the assumption that there will be approval of the activity at the next meeting.

Filling out the form will trigger the crucial steps to be taken, such as (1) establishing a well-defined scope or objective; (2) identifying those who have expertise in a given area; (3) identifying those who need to be made aware of, or invited to participate in, a given activity; (4) identifying the end users; (5) creating a task group representing all interests; (6) enabling the subcommittee to track a task group's efforts; and (7) publicity.

Ideally, the task group would be formed under the subcommittee with

The best way to ensure that an activity is appropriate is to complete the "Request for the Development of a New Standard" form.

a manageable number of members (approximately four to six) representing a balance of interests. Should this task group need to look outside of the ASTM subcommittee or committee for expertise, other members or individuals should be invited to participate.

NOTE—Task group members are not required to be members of ASTM.

JOINT TASK GROUPS

Coordination and cooperation are two of the most important ele-(CONTINUED ON PAGE 23)



REQUEST FOR THE DEVELOPMENT OF A NEW STANDARD

(COMPLETION OF THIS FORM IS REQUIRED FOR THE FORMATION OF A TASK GROUP TO DEVELOP A NEW STANDARD. SOME OF THE INFORMATION MAY NOT BE NECESSARY OR APPROPRIATE AS DETERMINED BY YOUR SUBCOMMITTEE.)

PHONE: ()	EMAIL:	
DDRESS (* only if nor	ı-ASTM member);		
ROPOSED DRAFT DOC	CUMENT TITLE:		
ROPOSED SCOPE:		·	

IPORTANT KEYWORD	S that are not included above:		
OJECTED TARGET DA	TE for first subcommittee ballot:	·	
			nis activity:
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ST TASK GROUP MEM			AFFILIATION
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ST TASK GROUP MEM NAME 1	BERS ALONG WITH THEIR AFFILIATIO	NS: NAME 6	
ST TASK GROUP MEM NAME 1 2	BERS ALONG WITH THEIR AFFILIATIO	NS: NAME 6 7	
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Furthermore, when a subcommittee identifies other subcommittees that should be represented on the task group, the subcommittee chairman should inform his or her staff manager. The manager will initiate coordination between the two or more subcommittees. Then, additional members will join the task group to represent the interests of the committees to which they belong. We call this a "joint task group." This could also be the case for representatives from organizations other than ASTM. The joint task group is a vehicle for individuals to communicate their inter-

PUBLICIZE!

If you are uncertain as to whether another committee or organization is interested in or may be impacted by your activity, publicize! Your staff manager can assist you with contacting the ASTM Corporate Communications Department.

HOW WILL THE STAN-DARD BE USED?

Doing the research up front will save time and energy. Ask questions of your subcommittee, such as: "Is it possible that the standard will be cited in a building code?" "Will

a government agency or regulatory body adopt the standard?"

START WRITING

Start by writing "Draft #1" at the top of your first page. It is likely that there will be more than one or two drafts of the document and it is always interesting to keep track.

WHAT KIND OF STANDARD AM I?

Now is the time to reach for your Blue Book (Form and Style for ASTM Standards) and dust it off, or download the latest version (October 1999) from the Web site (see ToolBox). Review the definitions of test method,



specification, practice, guide and classification. By determining which type of standard you are writing, you will know which mandatory sections must be included in your document.

Once you know which sections you need, you can start with an outline, such as (in the case of a test method):

- Title;
- Scope—purpose of the standard, general information;

The draft will have become a consensus document created, refined, and agreed upon by the experts in the industry.

- Significance and Use—how the standard is to be applied, specific information;
- Apparatus;
- Materials:
- Procedure:
- Keywords for indexing purposes.

USING THE INTERNET

ASTM encourages the use of the Interactive Standards Development Forums, a Web-based standards development tool to which you have access 24 hours a day, seven days a week (see ToolBox). Through the Forums, a task group chairman can designate who has the ability to review and

YOUR FIRST DRAFT GOES TO BALLOT

A first draft typically goes to a subcommittee ballot and receives its first round of comments and negatives. This is actually very positive and productive for the task group.

If, as mentioned above, a joint task group is working on the draft because another subcommittee needs to be involved, an "informational ballot" is an option. In addition to balloting

within the subcommittee with jurisdiction, a different sub-committee may receive an informational ballot. Comments received on the informational ballot are handled in the same manner as a negative or comment on the official ballot.

A STANDARD IS BORN

Maybe it seemed as though

there were a few obstacles. Perhaps you thought there was too much paperwork. However, the draft is approved and published as an ASTM standard. The draft will have become a consensus document created, refined, and agreed upon by the experts in the industry. The standard can be used worldwide in the international marketplace and adopted by countries in places where you have never been. We think that it's worth it. //

Felicia Quinzi is a manager in the Technical Committee Operations Division.

EXHIBIT 96

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR TESTING AND MATERIALS d/b/a ASTM INTERNATIONAL;

NATIONAL FIRE PROTECTION ASSOCIATION, INC.; and

AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC.,

Plaintiffs/Counter-defendants,

V.

PUBLIC.RESOURCE.ORG, INC.,

Defendant/Counterclaimant.

Case No. 1:13-cv-01215-TSC-DAR

EXPERT REPORT OF JAMES R. FRUCHTERMAN

Table of Contents

Introduction	1
Background and Qualifications	
What Does Accessibility Mean for a Blind Person?	
Overview and Summary of Opinions	
Testing the National Fire Protection Association Website's Accessibility	
Testing the American Society of Heating, Refrigerating and Air-Conditioning Engineers Website's Accessibility	10
Testing the American Society for Testing and Materials Website's Accessibility	12
Testing the Public Resource Org Website's Accessibility	1/

Introduction

As an expert in accessibility of written materials for people who have disabilities that affect using standard print (people who are print disabled), I have been retained by Public.Resource.Org to evaluate the accessibility of certain online content available on the websites of the plaintiffs and the defendant in this case. As someone dedicated to improving accessibility for the benefit of people with disabilities and in the public interest, I agreed to evaluate the accessibility to people who are blind of specific commonly used standard documents located on different websites.

This expert report is a summary of certain opinions that I intend to give, if asked, at trial regarding the accessibility of documents on various websites to people who are blind. This report also states the bases for my opinions, and it discloses the data or other information considered in forming those opinions. I reserve the right to change or supplement this report if additional evidence comes to my attention, and to prepare demonstratives and/or exhibits to illustrate or explain my opinions, as appropriate.

A copy of my curriculum vitae, including a list of my publications and presentations, is **Exhibit A** to this report. I provide my expertise in this case pro bono, and I am not receiving compensation for my time researching, writing this report, or testifying. I previously served as an expert in *The Authors Guild, Inc. et al. v. HathiTrust, et al.*, Case No. 1:11-cv-06351-HB (S.D.N.Y.) (case filed September 12, 2011), although I did not testify in that case. I have not given deposition or trial testimony in the past four years.

Background and Qualifications

I serve as Founder and Chief Executive Officer of Benetech, a nonprofit dedicated to creating new technology solutions that serve humanity and empower people to improve their lives. In 1980 I earned a B.S. in Engineering and an M.S. in Applied Physics from California Institute of Technology. I co-founded Calera Recognition Systems in 1982. Calera developed optical character recognition (OCR) technology that allowed computers to read virtually all printed text.

In 1989, I founded Arkenstone, a nonprofit social enterprise, which produced reading machines for the print disabled community based on the Calera technology, and was at one time the largest maker of affordable reading systems for the blind. The Arkenstone product line was sold in 2000 and the resulting capital funded the next phase of Arkenstone under its new name, Benetech. I have been the CEO of Benetech/Arkenstone since 1989.

I have served on three U.S. federal government advisory committees for disability issues: the Section 255 Telecommunications Access Advisory Committee, the Section 508 Electronic Information and Technology Access Advisory Committee, and the Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities. I have received numerous other awards and recognition for my work making print materials accessible to people who are blind or otherwise print disabled. In 2006 I received a MacArthur Fellowship. I was named an Outstanding Social Entrepreneur in 2003 by the Schwab Foundation and have frequently participated in the World Economic Forum Annual Meetings in Davos, Switzerland. Benetech received the Skoll Award for Social Entrepreneurship under my leadership. I also received the Migel Medal from the American Foundation for the Blind, the Robert F. Bray Award from the American Council of the Blind, and the American Library

Association's Francis Joseph Campbell Award in recognition of my successful efforts to make literary works more accessible to people who are blind or visually impaired.

What Does Accessibility Mean for a Blind Person?

Accessibility is usually defined in a functional way: can a person with a disability independently access the same information and perform the same tasks as a person without a disability? When it comes to accessing materials traditionally available as print, such as standards, there are many groups of print disabilities. The most severe is blindness, where a person cannot perceive the printed text at all. The next is vision impairment, where a person generally cannot perceive the text directly or with corrective lens, but may be able to use magnifiers of different types to read the text. Another group is learning disabilities that interfere with reading, such as dyslexia. A closely related group of disabilities involve brain injuries that affect reading or the retention of material read. Another group is physical disabilities that interfere with the holding or seeing of books or the turning of pages.

In this report, I focused on the accessibility challenges that would be experienced by blind people, because they are generally the most severe print disabilities. The other groups of people with print disabilities use similar technologies to access print (such as having it read aloud), and experience similar challenges as blind people. In the accessibility field, it is generally understood that if you make information accessible to a blind person, it will probably also meet the accessibility needs of the great majority of people with other print disabilities.

The most common technology used by a blind person for accessibility is called a screen reader. As the name suggests, a screen reader is a program that runs on a personal computer or a smartphone that reads the information on the screen aloud (using a computer-synthesized voice)

to a blind person. The screen reader runs "on top of" other programs, figuring out not only what text is on the screen, but also the controls that are displayed: items such as buttons, menus, textentry boxes and the like. Because of the amount of information on a complete screen, and its complexity, blind people need to be able to focus on the most important information so that they do not waste time listening to everything on the screen.

For the purpose of this report, measuring the accessibility of standards, I am assuming that the blind user is using a screen reader on top of a web browser on a personal computer.

Based on the information the screen reader can glean from the web pages displayed on the screen, can a blind person locate the standard and read it?

The accessibility tasks I tested were designed to assess whether a blind user with basic assistive technology skills could perform the same kind of tasks one might expect a user without a disability to perform in accessing a given standard, without requiring the intervention of a third party. This functional approach is the most common method of assessing accessibility. The specific tasks I investigated were:

- Could a blind user with basic assistive technology skills independently access a specific standard of interest?
- Could a blind user independently read the entire standard using assistive technology?
- Could a blind user independently navigate to a specific place in the standard and read the content in that place?
- Could a blind user independently do a full text search and find specific mentions of terms of interest?

I conducted these tests on a number of the same standards available on the Public.Resource.Org website and in the free reading sections of the websites of the National Fire Protection

Association (NFPA), the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and the American Society for Testing and Materials (ASTM). I primarily used the Window-Eyes screen reading software to perform my tests, but I also confirmed some of my observations with the JAWS screen reading program (these are the two most commonly-used screen reading programs by people who are print disabled). In order to further confirm my observations, I was assisted by an engineer who is blind and who is a skilled daily user of screen reader software. This engineer used the JAWS screen reader to confirm that as an individual who is print disabled and a regular user of a screen reader program, he was unable to access the website and several specific standards that I had found to be inaccessible to people who are print disabled.

Overview and Summary of Opinions

Having reviewed the accessibility of the same standards content rendered by Public.Resource.Org and those of the free access options provided by the NFPA, ASHRAE and ASTM, it is my opinion that Public.Resource.Org currently provides the only accessible option for people/citizens with print disabilities to access these standards.

Based on my extensive experience with content accessibility, approaches for "free access" that make it impossible to copy text generally make it impossible for the assistive technology used by people with print disabilities, especially blind people, to read the text aloud, present it visually in more accessible manners, or make the text available in braille.

Technological mechanisms that are designed to stop copying generally have the unfortunate side effect of locking out people with print disabilities from the ability to read the material.

The versions of the standards on the NFPA, ASHRAE, and ASTM free reading websites are not available in a way that is accessible to blind users. First, the NFPA and ASTM websites require registration before a user can access free standards on their websites. Although a blind user may be able to register on the ASTM website, a person who is blind would not be able to independently gain access to the NFPA standards because the NFPA website uses a registration process that employs buttons without proper markings for the blind to perceive them with accessibility software. Second, the free reading websites for NFPA, ASHRAE, and ASTM each display their standards in separate windows that prevent assistive technology from perceiving the words in those windows, meaning that that blind people would not be able to tell the difference between the standards and a blank window. These websites do not allow the text of the standard to be read aloud by a screen reader; the navigation controls do not work with a screen reader, so blind people are unable to navigate to a specific location in the standard; and the text search function does not work with a screen reader.

In contrast, the versions of the standards on the Public.Resource.Org website are available in a way that is accessible to blind users. Firstly, the Public.Resource.Org website does not require a registration process before a user can access the files containing the standards; the files are directly available to users. Secondly, many of the standards on the Public.Resource.Org website are available in well-structured HTML, a highly accessible format that allows blind users similar quality of access as that enjoyed by a person without a disability accessing a print version of the standard (or a locked digital version). Although some standards are available only in PDF format on the Public.Resource.Org website, those documents are accessible through extra steps such as optical character recognition. To summarize, it is my opinion that the standards on the Public.Resource.Org website are accessible to the blind through screen reader software, whereas

the standards on the free reading portions of the NFPA, ASHRAE, and ASTM websites are not accessible to the blind through screen reader software. Furthermore, it is my opinion that people with other print disabilities, such as vision impairment, dyslexia, brain injury and physical disabilities, would find the standards on the Public.Resource.Org accessible with screen readers and other assistive technology, whereas the standards on the free reading portions of the NFPA, ASHRAE, and ASTM websites would not be accessible to the great majority of people with these types of print disabilities.

Testing the National Fire Protection Association Website's Accessibility

I performed my test of the NFPA, ASHRAE, and ASTM websites in two phases. The first phase was an investigation of whether a blind or visually impaired person can gain access to a standard on the NFPA website by going through a process of obtaining free access while using a screen reading program. On the NFPA website it appears that users must register and agree to terms of use before accessing any of the free standards on the website. The results of the test are that a blind user would not be able to independently sign up for a free account on the NFPA website because the registration process involves elements that cannot be perceived by screen reading software.

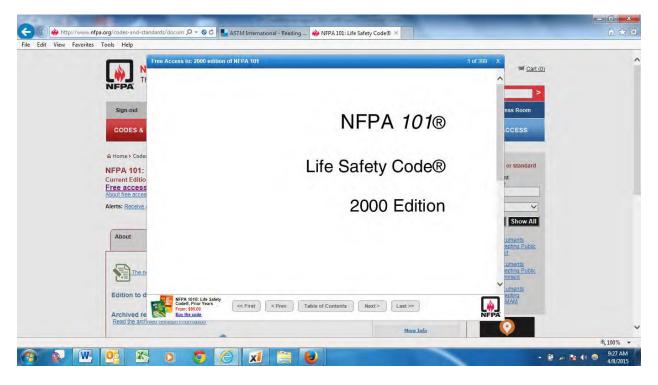
The accessibility standard in common use for websites is the Web Content Accessibility Guidelines (WCAG), published by the World Wide Web Consortium, the main standards body for technology related to the Web. A copy of the WCAG is **Exhibit C**. (As with other World Wide Web Consortium standards, the WCAG standard is freely available at no cost on the World Wide Web Consortium website, in HTML, as stated in the World Wide Web Consortium Document License, **Exhibit D**). The very first element in the WCAG standard specifies that

"information and user interface components must be presentable to users in ways they can perceive." The key recommendation for how to address this need is to "provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language." The two easiest ways to meet this requirement are to present textual content as text and to add text labels to non-text content. For example, the text in a regular web page is highly accessible: the screen reader software can simply grab each word, sentence and paragraph and read it aloud (or make it larger, or provide it to a braille device). Screen readers understand web page structure, so links and headers are identified as such when they are read aloud. A visual button on a page can easily have a text label as part of the web page that identifies its function (for example, "I agree"). A screen reader encountering such a button on a web page would simply say aloud "Button, I agree," and the screen reader provides a blind person with a way to activate the button using the keyboard (because blind people avoid using mice for obvious reasons).

These fundamental requirements for accessibility are the ones that the NFPA website fails to meet. Rather than cataloging the many parts of the WCAG accessibility standards the NFPA website fails to meet, I will focus on two key items. The first is that a blind person trying to sign up for a free access account needs the assistance of a sighted person to sign up. This is because, for instance, the NFPA website uses a visual button for the "I Agree" function on its registration page, and this visual button fails to have a text label, meaning that a blind person using a screen reader would not know what the button is for. A blind person who arrived at the point where he or she needed to assent to the terms and conditions after some effort would not be able to tell what to do, or which button to push, because there is no text equivalent attached to the "I AGREE" button. On the NFPA website, the screen reader knows that there are buttons but

can't tell what they do because there are no text labels on them, and the letters "I AGREE" are shown only as a picture of those words, which is not perceptible to a blind person.

The second phase of my test was to perform the functional tests on a specific standard, NPFA 101-2000. In this second phase of the test is also where the NFPA free access website fails to make the text accessible, and fails to meet the WCAG accessibility standard mentioned above. Rather than presenting the text in a standard webpage, which is the typical way to present information in a web browser, the NFPA site opens an image-only window. Rather than presenting the text of the standard as HTML text, it presents it as a picture of the text. See the screen shot below.



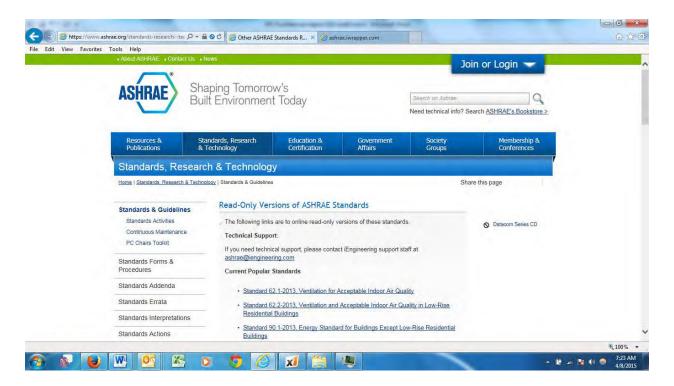
To a sighted person, both the text in a standard webpage and the text in an image-only window looks pretty similar: the words are visible. But, "under the hood," so to speak, the use of an image prevents the browser from presenting the text on the screen as text. A browser ordinarily transmits text to a screen reader in a way that facilitates access for the visually

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 144 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 398 of 537

impaired. Instead, when NFPA's website presents text only within an image, the web browser processes it as an image, as if someone took a picture of a page and sent it as a photo rather than sending a text file. The screen reader cannot perceive the text in an image; all the screen reader can perceive is that there is a big picture on the screen. A screen reader stops working at this point: it does not know what is in the picture. And so even if a blind person were able to open a specific standard on the NFPA website, such as NFPA 101, he or she will not be able to perceive any of the content in the standard because the page appears blank to him or her. This means that on the NFPA free reading website a blind person cannot independently read the standard, go to a specific page within it, or search it for terms of interest.

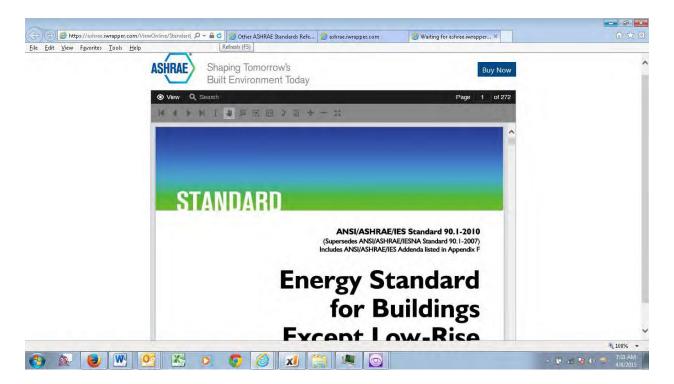
Testing the American Society of Heating, Refrigerating and Air-Conditioning Engineers Website's Accessibility

Counsel suggested I investigate the accessibility of ASHRAE Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings (I-P). ASHRAE's website does not require a visitor to sign up for a free account before viewing certain standards, and so a blind user should be able to navigate to the place where online read-only versions of the standards reside, and then identify specific standards by number and description. Thus, the first of the four tasks, navigating to a specific standard, is a task that a blind person can perform independently on the ASHRAE website. See the screen shot below of this portion of the ASHRAE website with the listing of links to different standards.



However, once a specific standard is chosen, the standard is not perceptible to a blind person, for the same reason that I discussed earlier with respect to the NFPA website. See the screen shot below of the ASHRAE 90.1-2010 standard as displayed on the website. The text of the standard is inaccessible to a blind person, and therefore a blind person is unable to perform the functional accessibility tasks. First, the ASHRAE website presents the standard in a window that prevents screen reader software from reading aloud the text of the standard. Second, the navigation controls on the standards-display portion of the ASHRAE website do not work with a screen reader, so a blind person would be unable to navigate to a specific location in the standard. Lastly, although there is a text search function that works for a sighted person, I was unable to get that functionality to work with a screen reader. And, even if I could get the search function to work with a screen reader, a screen reader would still be unable to read aloud the actual content of the standard at that point, and so the exercise would be pointless for a blind person.

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 146 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 400 of 537

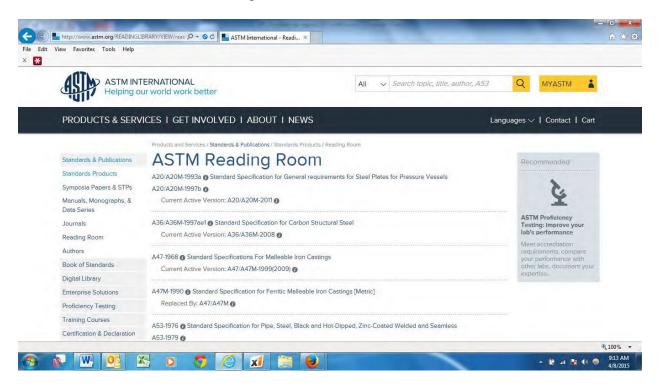


Because the ASHRAE website provides the content of the standard as an image, it is inaccessible to a blind person. As I mentioned above, the WCAG accessibility standard requires the text to be provided for any information delivered as an image, and the ASHRAE website fails to do so for the standard I tested. I also tested five other ASHRAE standards (ASHRAE 62.1-2013, 62.2-2013, 90.1-2013 (I-P), 90.2-2007, and 189.1-2014) on the ASHRAE website, and they all presented the same image-based interface to the standards, and are therefore inaccessible to blind people.

Testing the American Society for Testing and Materials Website's Accessibility

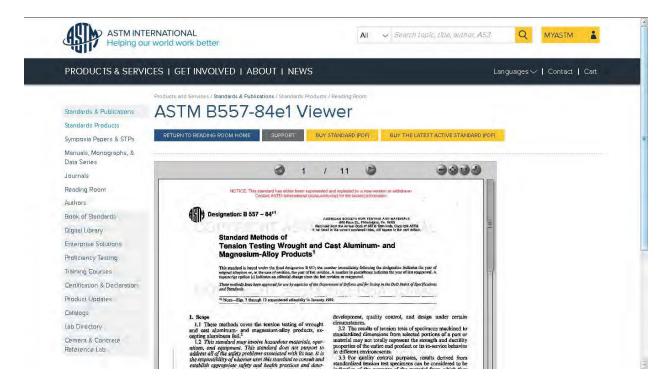
Counsel suggested I investigate the accessibility of Standard B557-84 Wrought and Cast Aluminum- and Magnesium-Alloy Products. The ASTM website requires visitors to sign up for a free account before viewing certain standards. The process of setting up a free account is accessible, and therefore a blind person should be able to independently gain access to the

ASTM Reading Room, where the standards are located. A blind user could navigate to the place where online read-only versions of the standards reside, and could identify specific standards by number and description. Thus the first of the four tasks, navigating to a specific standard, was a task that a blind person could perform independently. See the screen shot below of this portion of the ASTM website with the listing of links to different standards.



I was able to locate a version of the standard ASTM B557-84e1. When one selects the standard, a new window appears with an image-only viewer of the standard. For the same reason as I described earlier with respect to the NFPA and ASHRAE websites, this standard on the ASTM website is not perceptible to a blind person. First, the ASTM website presents the standard in a window that prevents screen reader software from reading aloud the text of the standard. Second, the navigation controls on the standards-displaying portion of the ASTM website do not work with a screen reader, so a blind person would be unable to navigate to a specific location in

the standard. I was not able to locate a text-searching function on the ASTM standard I examined.



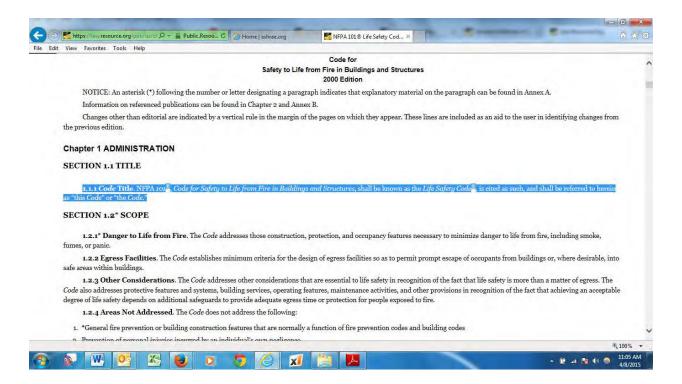
Because the content of the ASTM standard appears as an image in the ASTM Reading Room, it is inaccessible to the blind person. As I mentioned above, the WCAG accessibility standard requires the text to be provided for any information delivered as an image, and the ASTM website fails to do that for the standard I tested. I also tested the first standard listed on the website, ASTM A20/A20M-93a, and it presented the same image-based inaccessible interface to the standard, meaning that a blind person would not be able to perceive it.

Testing the Public.Resource.Org Website's Accessibility

After unsuccessfully trying to access the NFPA 101-2000, ASHRAE 90.1-2010 and ASTM B557-84 standards on the websites of the three standards organization as a blind user would, I went to the same standards on the Public.Resource.Org website and tried the same

tasks. I was able to successfully complete all of the accessibility tasks on all three of the standards on the Public.Resource.Org website.

The Public Resource Org website has no required sign-up procedure, so I did not need to test the accessibility of that process. It is possible to go directly to a specific standard either by using a direct weblink or by navigating the text-oriented website. For example, searching on the terms "NFPA 101 resource.org" shows the standard available directly from Google's search engine in the top few links, in both PDF and HTML form. HTML is generally more accessible, so I selected that link and it directly opened up in my browser. The entire text of the standard was available, and I was able to read the standard using screen reading software, navigate to a specific place in the document using screen reading software, and search for key terms using screen reading software. My test therefore indicated that a blind person using a screen reader would be able to perform all of the functional tasks: reading the entire standard, navigating to a specific place in the standard, or searching on key terms. Because the text is provided as standard HTML, a blind person is able to listen to the text, or access it using a digital braille device. This kind of HTML content is also highly accessible to people with other print disabilities and the assistive technology they use to access print. For example, people with low vision or with dyslexia often use a screen reader to read text aloud.



I also found a version of the ASTM B557-84 standard on the Public.Resource.Org website as an HTML file. It was well-structured and highly accessible. Like the NPFA 101-2000 standard on the Public.Resource.Org website, this standard could be readily located and accessed by a blind person using a screen reader, and could then be perceived in its entirety using the screen reader.

I then examined the accessibility of more recent versions of the NFPA 101 standard located on the Public.Resource.Org website. These were available only in PDF formats, not HTML. I accessed the 2012 version of the NPFA 101 standard, and found that it was an image-based PDF. I also searched for the ASHRAE 90.1-2010 standard and found it in PDF form on the Public.Resource.Org website without needing to login to access it. It was also an image-based PDF. Image-based PDFs are generally not accessible to blind people. However, these files both came with the underlying text associated with the page images. It was possible for me to open the PDFs in a browser or Adobe Reader, do a Select All command (Control A on a PC),

a Copy command (Control C on a PC) and then switch to a text-oriented word processing program (Microsoft Word) and paste the text of the entire standard into a file there. The text appeared to be an automatic optical character recognition version of the standard, which meant there were some errors in the transcription. But, generally the accuracy was sufficient to perform the functional tasks: reading the entire standard, navigating to a specific place in the standard, or searching on key terms. It should be noted that this approach would not likely occur to a blind person opening an image PDF file, because the Adobe software does not announce that the underlying text was present. It is also possible for a blind person to independently perform optical character recognition on image-based PDFs themselves and access the text that way, and many advanced computer users that are blind would be aware that this is possible. Although performing optical character recognition on a PDF is not as optimal as having HTML text available to read immediately without conversion, this method by which PDFs can be made perceptible to the blind is still better than having no access, which is effectively what the NFPA, ASHRAE, and ASTM websites offer.

Dated: April 13, 2015

James R. Fruchterman

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 152 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 406 of 537

Exhibit A

James R. Fruchterman

Founder and CEO

Benetech

Education

- California Institute of Technology
 B.S. Engineering, 1976-80
 M.S. Applied Physics, 1978-80
- Stanford University, 1980-81
 Ph.D. Studies in Electrical Engineering

Professional Experience

- CEO and Founder, 2015-present
 President, CEO, Chairman, Founder, 2000-2014
 Benetech (name changed from Arkenstone in 2000)
 Palo Alto, California
- President, CEO, Chairman, Founder, 1989-2000
 Arkenstone, Inc.
 Moffett Field, California
- Director, 1989-present
 Vice President Finance, CFO, 1989-2004
 President & CEO, Founder, 1989-95
 RAF Technology, Inc.
 Palo Alto, California and Redmond, Washington
- Vice President, Marketing, 1987-89
 Founder, Vice President, Finance, 1982-88
 Calera Recognition Systems, Inc.
 Santa Clara, California
- Prior engineering positions with:
 - Phoenix Engineering, Inc.
 - G.C.H., Inc.
 - IBM T.J. Watson Research Center
 - General Motors Company
 - NASA Jet Propulsion Laboratory
 - Fermi National Accelerator Laboratory

Publications

- Technology Serving Humanity (chapter). In Schultz, R. (editor) <u>Creating Good Work</u>, Palgrave Macmillan, February 2013
- Guest Editor's Page, AFB Journal of Visual Impairment & Blindness, October-November 2012
- An Interview With Technology Guru George Kerscher, AFB Journal of Visual Impairment & Blindness, October-November 2012
- For Love or Lucre, Stanford Social Innovation Review, Spring 2011
- Developing Information Technology to Meet Social Needs. In Innovations, MIT Press, 2008
- Accessing Books and Documents, a chapter in the book, <u>Assistive Technology for Vision-Impaired and Blind People</u>, Springer Verlag 2008
- Everyone Deserves Access to Technology, OpEd in The Sacramento Bee by Jim Fruchterman and Gregg Vanderheiden, June 17, 2007
- Document Recognition Serving People With Disabilities, Proc. SPIE 6500, International Society for Optics and Photonics, 2007
- Pattern Recognition Technology Helps Disabled People Access Books, SPIE Newsroom, International Society for Optics and Photonics, May 14, 2007
- Nothing Ventured Nothing Gained, Addressing the Critical Gaps in Risk-Taking Capital for Social Enterprise, by Jed Emerson, Tim Freundlich and Jim Fruchterman, published by Oxford Said Business School, 2006
- Build Great Companies, Then Help Build a Great World, OpEd in The San Jose Mercury News, November 13, 2006
- Comments on Accessibility of Google Print and Google's Library Project, white paper, February 2005
- <u>Technology Benefiting Humanity</u>, published in the Association for Computing Machines Ubiquity magazine, March 2004
- The Power of Technology Social Enterprises, published in the N-TEN forecast series, February 2004
- In the Palm of Your Hand: A Vision of the Future of Technology for People with Visual Impairments, published in the American Foundation for the Blind's Journal of Vision Impairment and Blindness, October 2003
- The Chafee Amendment: Improving Access to Information, published in <u>Information</u>
 <u>Technology and Disabilities</u>, a journal published by <u>Equal Access to Software and Information</u>
 (EASI), co-authored with Bookshare Senior Product Manager Alison Lingane, October 2003
- The Soundproof Book: Exploration of Rights Conflict and Access to Commercial EBooks for People with Disabilities, published in *First Monday*, co-authored with George Kerscher, the International Project Manager of the DAISY Consortium, May 2002
- Bookshare, Books without Barriers, at the Closing the Gap conference, Minneapolis, MN, October 2001

- Two presentations given at the IT Accessibility 2001 Conference, May 2001 at the National Institute of Standards and Technology
 - <u>I Dream of Software</u>
 - The Business Case for Adaptive Technology
- Humanizing the Voice of the Machine, with Prof. Mari Ostendorf (University of Washington), Annual Meeting of the American Association for the Advancement of the Machine, Boston, MA, February 2000
- The Many Facets of Open Book: Ruby Edition, California State University, Northridge (CSUN), 15th Technology and Persons with Disabilities Conference, March 2000
- Corporate Responsibility for Adaptive Technology, California State University, Northridge (CSUN), 14th Technology and Persons with Disabilities Conference, March 1999
- Developing Partnerships for Assistive and Universally Designed Technology for Persons with Disabilities, Testimony before United States House of Representatives, Committee on Science, Subcommittee on Technology, August 4, 1998
- Access to Maps and Location Information through Virtual Reality Techniques and GPS Satellite Receivers, 3rd International Technical Aids Seminar, Tokyo, Japan, July 1994

Invited Talks

- "<u>Innovation in America: The Role of Technology</u>," August 1, 2013, Testimony before U.S. House of Representatives, Judiciary Committee's Subcommittee on Courts, Intellectual Property, and the Internet.
- "Social Change at Scale That's Innovation!" May 2012, TEDxSanJoseCA 2012, San Jose, CA.
- <u>"The Power of Failure, People and Karma Banking,"</u> May 20, 2012, Commencement speech, St. Mary's College, Moraga, CA.
- "Raising the Floor," October, 2011, Keynote Speech, Association for Education and Rehabilitation of the Blind and Visually Impaired Conference, Cleveland OH.
- Keynote speech, IEEE Sections Congress, August 2011, San Francisco, CA.
- "Making the Book Truly Accessible," Tools of Change Conference, New York, NY, 2011
 Keynote Speech
- UBS-Ashoka Visionaris Award, Keynote Speech, Social Entrepreneur of the Year Award, Mexico City, Mexico, September, 2010
- A series of three invited speeches on Bookshare and accessible books, in Tokyo, Shizuoka and Osaka, Japan, February, 2009
- Keynote Speech, Social Enterprise World Forum, Edinburgh, Scotland, September, 2008
- "Raising the Floor: Providing Accessible Technology and Content to Every Person with a
 Disability on the Planet," International Conference on Computers Helping People with
 Special Needs, Linz, Austria, July, 2008 Keynote Speech
- "Raising the Floor," CSUN Conference on Technology and Persons with Disabilities, March, 2008 Keynote Speech

- Extensive speaking engagements to students about technology serving people with disabilities. Have done invited talks at:
 - Stanford University
 - University of California at Berkeley
 - Brigham Young University
 - University of the Pacific
 - Santa Clara University
 - California Institute of Technology
 - San Jose State
 - University of California at Santa Cruz
 - University of California at Davis
 - Loyola Marymount University
 - Pepperdine University
 - University of Washington
 - Columbia University
 - Harvard University
 - University of Geneva
 - Oxford University
- Inflection Point Opportunities in Social Investment, Closing Keynote for the UBS Philanthropy Forum, Lisbon, Portugal, July 2007
- It's Not Rocket Science: Building Social Enterprises, Keynote for the 7th Gathering of the Social Enterprise Alliance, Atlanta, Georgia, March 2006
- Opening Keynote for the Global Social Venture Competition, New York, April, 2006
- Keynote for the 7th IAPR Workshop on Document Analysis Systems, Nelson, New Zealand, February 2006
- <u>Building a Global Library for People with Print Disabilities</u>, a speech for the World Summit on the Information Society, Tunis, Tunisia, November 2005
- Innovating Information Technologies to Protect Human Rights, a speech for the World Affairs Council of Northern California, February 2004
- Setting the 2004 Agenda: Technology, speaker at the World Economic Forum, Davos, Switzerland, January 2004
- Seizing Market Failure as an Investment Opportunity, Keynote for the Business for Social Responsibility Annual Conference, Los Angeles, November 2003.
- In the Palm of Your Hand, Keynote for the World Blind Union Asia Pacific conference, Singapore, November, 2003
- Technology and Human Rights, University of Peradeniya, Sri Lanka, November, 2003
- When Markets Fail, Who Responds? Discussion Leader at the World Economic Forum, Davos, Switzerland, January 2003
- Technology for Nonprofits, with Michael Gilbert, National Gathering for Social Entrepreneurs, Minneapolis, MN, December, 2002
- Bookshare: Large Scale, Web-Based Accessible Books, TechShare conference organized by

the Royal National Institute of the Blind, Birmingham, UK, November 2002

- Putting Technology to Work for Development, speech at the United Nations to the joint meeting of the World Technology Network and UNOPS, July 2002
- Bookshare: The Project for Creating Accessible Books through Computers, at the General Session of the <u>National Federation of the Blind</u> 2002 Annual Convention, July 2002
- Stanford Social Entrepreneurship Conference, January 2002
- The Once and Future Web: Tenth Anniversary of the First U.S. Web Page at the Stanford Linear Accelerator Laboratory, December 2001
- NetImpact Annual Conference at Kenan-Flagler Business School, November 2001
- American Council of the Blind Annual Convention, July 2001
- Bringing Socially Beneficial Technology into the Service of Humanity, EE380 at Stanford University, April 2001
- Information Technology in the Service of Human Rights at the Computers, Freedom and Privacy Conference, March 2001
- Rank Prize Fund Symposium, Grasmere, England
- Guest Lecturer for CSUN program in disability leadership

Professional Associations

- Association for Computing Machinery
- Institute of Electrical and Electronics Engineers
- American Association for the Advancement of Science
- Social Enterprise Alliance

Awards and Public Service

- Head of Benetech Delegation, Diplomatic Conference to Conclude a Treaty to Facilitate
 Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities,
 World Intellectual Property Organization, Marrakesh, Morocco (2013)
- Member, Global Agenda Council on Measuring Sustainability, World Economic Forum (2012-2014)
- Member of the Board of Directors, ZeroDivide, foundation investing in community enterprises that leverage technology to benefit people in low-income and other underserved communities (2007-2013)
- Commissioner, Federal Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities, 2010-2011
- Duke University, CASE Award for Enterprising Social Innovation, 2011
- Brigham Young University, Center for Economic Self-Reliance Social Innovator of the Year,
 2009
- AT&T Technology Innovation Award from the Alliance for Technology Access, March

2008

- Strache Leadership Award from the California State University, Northridge, 2007
- John D. and Catherine T. MacArthur Foundation Fellowship, 2006
- Technical Advisory Committee Member, National Instructional Materials Accessibility Standard, U.S. Department of Education (2005-2008)
- Advisory Committee Member, National Instructional Materials Accessibility Center, U.S.
 Department of Education (2006-present)
- Skoll Award for Social Entrepreneurship, 2004 and 2006
- Fast Company Social Capitalist Award: Top 20 Groups Changing the World, 2004
- Laureate, <u>The 2003 and 2001 Tech Museum Awards</u>
- American Library Association Francis Joseph Campbell Award, 2003
- Schwab Foundation Outstanding Social Entrepreneur of 2003 Award
- Member, the Community Partnership Committee, which oversees a diversity and disability agreement with SBC, Inc.
- Runner-up, Yale-Goldman Sachs National Nonprofit Business Plan Competition, 2003
- American Foundation for the Blind Access Award, 2003
- Robert S. Bray Award, The American Council of the Blind
- Winner, Education Category, 2002 Stockholm Challenge
- Fast 50 Champion of Innovation 2002
- Judge, 2002 National Social Venture Competition
- Member, Board of Directors of the Social Enterprise Alliance (2000-2010, chair 2008-2010)
- Member of the Advisory Board, Telecommunications Access Rehabilitation Engineering Research Center, a joint effort of the Trace R&D Center of the University of Wisconsin-Madison and the Technology Access Program of Gallaudet University, 2001
- Panelist, National Science Foundation Small Business Innovation Research Program, 1998, 2000, 2003
- Participant, 1998 NSF Workshop for Discussing Research Priorities and Evaluation Strategies in Speech Synthesis, August, 1998
- Member, Electronic Information and Technology Access Advisory Committee, a federal advisory committee responsible for drafting federal acquisition standards for accessibility under Section 508, 1998-1999
- Member, Telecommunications Access Advisory Committee, a federal advisory committee responsible for making recommendations to the U.S. Access Board and Federal Communications Commission on implementing portions of the 1996 Telecommunications Act, 1996-1997
- U.S. Patent Number 5,470,223: System and Method for Tracking a Pedestrian

- Finalist, 1996 Discover Magazine Awards for Technological Innovation
- 1996 Access Award, American Foundation for the Blind

Major Works and Areas of Expertise

- Founder and CEO of <u>Benetech</u>, a highly innovative nonprofit company focused on using the power of technology to address social needs in areas such as disability, literacy, human rights and the environment.
- Founder of Arkenstone, Inc., a leading nonprofit organization providing adaptive technology for education and employment for people with disabilities and the largest maker of reading systems for people with blindness, vision impairment and learning disabilities. Developer of the Arkenstone Reader, the first affordable reading system for the blind. Designer of Open Book, the first talking Windows program for the blind. Co-inventor of Atlas Speaks, the first accessible map software for the blind, and of Strider, a talking GPS locator for the blind.
- Cofounder of <u>RAF Technology</u>, <u>Inc.</u>, the nation's leading company in optical character recognition technology for processing forms in postal and medical applications. RAF's software is used to route the United States mail.
- Cofounder of Calera Recognition Systems, Inc., the first company to develop omnifont optical character recognition that works without user training.

Exhibit B

Documents, Facts, or Data Considered in Forming My Opinions:

- The ASHRAE website, at www.ashrae.org
- The ASTM website, at www.astm.org
- The NFPA website, at <u>www.nfpa.org</u>
- The Public.Resource.Org website, at www.public.resource.org
- World Wide Web Consortium's Web Content Accessibility Guidelines (WCAG) 2.0, at http://www.w3.org/TR/WCAG20/
- Window-Eyes screen reader software
- JAWS screen reader software
- I also consulted with a blind engineer (and skilled daily user of screen reader technology) to confirm the specific accessibility challenges I found in my tests

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 161 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 415 of 537

Exhibit C

C Recommendation

[contents]



Web Content Accessibility Guidelines (WCAG) 2.0

W3C Recommendation 11 December 2008

This version:

http://www.w3.org/TR/2008/REC-WCAG20-20081211/

Latest version:

http://www.w3.org/TR/WCAG20/

Previous version:

http://www.w3.org/TR/2008/PR-WCAG20-20081103/

Editors:

Ben Caldwell, Trace R&D Center, University of Wisconsin-Madison Michael Cooper, W3C Loretta Guarino Reid, Google, Inc. Gregg Vanderheiden, Trace R&D Center, University of Wisconsin-Madison

Previous Editors:

Wendy Chisholm (until July 2006 while at W3C) John Slatin (until June 2006 while at Accessibility Institute, University of Texas at Austin) Jason White (until June 2005 while at University of Melbourne)

Please refer to the errata for this document, which may include normative corrections.

See also translations.

This document is also available in non-normative formats, available from Alternate Versions of Web Content Accessibility Guidelines 2.0.

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Abstract

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these. Following these guidelines will also often make your Web content more usable to users in general.

WCAG 2.0 success criteria are written as testable statements that are not technology-specific. Guidance about satisfying the success criteria in specific technologies, as well as general information about interpreting the success criteria, is provided in separate documents. See Web Content Accessibility Guidelines (WCAG) Overview for an introduction and links to WCAG technical and educational material.

WCAG 2.0 succeeds Web Content Accessibility Guidelines 1.0 [WCAG10], which was published as a W3C Recommendation May 1999. Although it is possible to conform either to WCAG 1.0 or to WCAG 2.0 (or both), the W3C recommends that new and updated content use WCAG 2.0. The W3C also recommends that Web accessibility policies reference WCAG 2.0.

Status of this Document

Case 1:13-cv-01215-TSC. Document 122-6. Filed 12/22/15. Page 163 of 231. US document 42/26 Filed 12/22/15. Page 163 of 231. US document W36 equipment W36 equipment was part of the W36 equipment was part of the W36 equipment was part of the W36 equipment of the W36 equipment was part of the W36 equipment w

This is the Web Content Accessibility Guidelines (WCAG) 2.0 <u>W3C Recommendation</u> from the <u>Web Content Accessibility Guidelines Working Group.</u>

This document has been reviewed by W3C Members, by software developers, and by other W3C groups and interested parties, and is endorsed by the Director as a W3C Recommendation. It is a stable document and may be used as reference material or cited from another document. W3C's role in making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and interoperability of the Web.

WCAG 2.0 is supported by the associated non-normative documents, <u>Understanding WCAG 2.0</u> and <u>Techniques for WCAG 2.0</u>. Although those documents do not have the formal status that WCAG 2.0 itself has, they provide information important to understanding and implementing WCAG.

The Working Group requests that any comments be made using the provided online comment form. If this is not possible, comments can also be sent to public-comments-wcag20@w3.org. The archives for the public comments list are publicly available. Comments received on the WCAG 2.0 Recommendation cannot result in changes to this version of the guidelines, but may be addressed in errata or future versions of WCAG. The Working Group does not plan to make formal responses to comments. Archives of the WCAG WG mailing list discussions are publicly available, and future work undertaken by the Working Group may address comments received on this document.

This document has been produced as part of the W3C Web Accessibility Initiative (WAI). The goals of the WCAG Working Group are discussed in the WCAG Working Group charter. The WCAG Working Group is part of the WAI Technical Activity.

This document was produced by a group operating under the <u>5 February 2004 W3C Patent Policy</u>. W3C maintains a <u>public list of any patent disclosures</u> made in connection with the deliverables of the group; that page also includes instructions for disclosing a patent. An individual who has actual knowledge of a patent which the individual believes contains <u>Essential Claim(s)</u> must disclose the information in accordance with <u>section 6 of the W3C Patent Policy</u>.

Table of Contents

Introduction

WCAG 2.0 Layers of Guidance

WCAG 2.0 Supporting Documents

Important Terms in WCAG 2.0

WCAG 2.0 Guidelines

1 Perceivable

- 1.1 Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.
- 1.2 Provide alternatives for time-based media.
- 1.3 Create content that can be presented in different ways (for example simpler layout) without losing information or structure.
- 1.4 Make it easier for users to see and hear content including separating foreground from background.

2 Operable

- 2.1 Make all functionality available from a keyboard.
- 2.2 Provide users enough time to read and use content.
- 2.3 Do not design content in a way that is known to cause seizures.
- 2.4 Provide ways to help users navigate, find content, and determine where they are.

3 Understandable

- 3.1 Make text content readable and understandable.
- 3.2 Make Web pages appear and operate in predictable ways.
- 3.3 Help users avoid and correct mistakes.

4 Robust

4.1 Maximize compatibility with current and future user agents, including assistive technologies.

Conformance

Conformance Requirements

JA1659

Conformance Claims (Optional)

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 164 of 231 USCA Case #17(e)050 Page 418 of 53
Statement of Partial Conformance - Language

Appendices

Appendix A: Glossary (Normative)
Appendix B: Acknowledgments
Appendix C: References

Introduction

This section is informative.

Web Content Accessibility Guidelines (WCAG) 2.0 defines how to make Web content more accessible to people with disabilities. Accessibility involves a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities. Although these guidelines cover a wide range of issues, they are not able to address the needs of people with all types, degrees, and combinations of disability. These guidelines also make Web content more usable by older individuals with changing abilities due to aging and often improve usability for users in general.

WCAG 2.0 is developed through the <u>W3C process</u> in cooperation with individuals and organizations around the world, with a goal of providing a shared standard for Web content accessibility that meets the needs of individuals, organizations, and governments internationally. WCAG 2.0 builds on WCAG 1.0 [WCAG10] and is designed to apply broadly to different Web technologies now and in the future, and to be testable with a combination of automated testing and human evaluation. For an introduction to WCAG, see the <u>Web Content Accessibility Guidelines (WCAG) Overview</u>.

Web accessibility depends not only on accessible content but also on accessible Web browsers and other user agents. Authoring tools also have an important role in Web accessibility. For an overview of how these components of Web development and interaction work together, see:

- Essential Components of Web Accessibility
- User Agent Accessibility Guidelines (UAAG) Overview
- Authoring Tool Accessibility Guidelines (ATAG) Overview

WCAG 2.0 Layers of Guidance

The individuals and organizations that use WCAG vary widely and include Web designers and developers, policy makers, purchasing agents, teachers, and students. In order to meet the varying needs of this audience, several layers of guidance are provided including overall *principles*, general *guidelines*, testable *success criteria* and a rich collection of *sufficient techniques*, *advisory techniques*, and *documented common failures* with examples, resource links and code.

- **Principles** At the top are four principles that provide the foundation for Web accessibility: *perceivable, operable, understandable, and robust.* See also <u>Understanding the Four Principles of Accessibility.</u>
- Guidelines Under the principles are guidelines. The 12 guidelines provide the basic goals that authors should work
 toward in order to make content more accessible to users with different disabilities. The guidelines are not testable,
 but provide the framework and overall objectives to help authors understand the success criteria and better
 implement the techniques.
- Success Criteria For each guideline, testable success criteria are provided to allow WCAG 2.0 to be used where requirements and conformance testing are necessary such as in design specification, purchasing, regulation, and contractual agreements. In order to meet the needs of different groups and different situations, three levels of conformance are defined: A (lowest), AA, and AAA (highest). Additional information on WCAG levels can be found in Understanding Levels of Conformance.
- Sufficient and Advisory Techniques For each of the *guidelines* and *success criteria* in the WCAG 2.0 document itself, the working group has also documented a wide variety of *techniques*. The techniques are informative and fall into two categories: those that are *sufficient* for meeting the success criteria and those that are *advisory*. The advisory techniques go beyond what is required by the individual success criteria and allow authors to better address the guidelines. Some advisory techniques address accessibility barriers that are not covered by the testable success criteria. Where common failures are known, these are also documented. See also <u>Sufficient and Advisory</u>

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 165 of 231 USCA Case 1:13-cv-01215-TSC Document 122-6 Filed: 01/31/2018 Page 419 of 53

All of these layers of guidance (principles, guidelines, success criteria, and sufficient and advisory techniques) work together to provide guidance on how to make content more accessible. Authors are encouraged to view and apply all layers that they are able to, including the advisory techniques, in order to best address the needs of the widest possible range of users.

Note that even content that conforms at the highest level (AAA) will not be accessible to individuals with all types, degrees, or combinations of disability, particularly in the cognitive language and learning areas. Authors are encouraged to consider the full range of techniques, including the advisory techniques, as well as to seek relevant advice about current best practice to ensure that Web content is accessible, as far as possible, to this community. Metadata may assist users in finding content most suitable for their needs.

WCAG 2.0 Supporting Documents

The WCAG 2.0 document is designed to meet the needs of those who need a stable, referenceable technical standard. Other documents, called supporting documents, are based on the WCAG 2.0 document and address other important purposes, including the ability to be updated to describe how WCAG would be applied with new technologies. Supporting documents include:

- 1. <u>How to Meet WCAG 2.0</u> A customizable quick reference to WCAG 2.0 that includes all of the guidelines, success criteria, and techniques for authors to use as they are developing and evaluating Web content.
- 2. <u>Understanding WCAG 2.0</u> A guide to understanding and implementing WCAG 2.0. There is a short "Understanding" document for each guideline and success criterion in WCAG 2.0 as well as key topics.
- 3. <u>Techniques for WCAG 2.0</u> A collection of techniques and common failures, each in a separate document that includes a description, examples, code and tests.
- 4. The WCAG 2.0 Documents A diagram and description of how the technical documents are related and linked.

See Web Content Accessibility Guidelines (WCAG) Overview for a description of the WCAG 2.0 supporting material, including education resources related to WCAG 2.0. Additional resources covering topics such as the business case for Web accessibility, planning implementation to improve the accessibility of Web sites, and accessibility policies are listed in WAI Resources.

Important Terms in WCAG 2.0

WCAG 2.0 includes three important terms that are different from WCAG 1.0. Each of these is introduced briefly below and defined more fully in the glossary.

Web Page

It is important to note that, in this standard, the term "Web page" includes much more than static HTML pages. It also includes the increasingly dynamic Web pages that are emerging on the Web, including "pages" that can present entire virtual interactive communities. For example, the term "Web page" includes an immersive, interactive movie-like experience found at a single URI. For more information, see Understanding "Web Page".

Programmatically Determined

Several success criteria require that content (or certain aspects of content) can be "programmatically determined." This means that the content is delivered in such a way that user agents, including assistive technologies, can extract and present this information to users in different modalities. For more information, see <u>Understanding Programmatically Determined</u>.

Accessibility Supported

Using a technology in a way that is accessibility supported means that it works with assistive technologies (AT) and the accessibility features of operating systems, browsers, and other user agents. Technology features can only be relied upon to conform to WCAG 2.0 success criteria if they are used in a way that is "accessibility supported". Technology features can be used in ways that are not accessibility supported (do not work with assistive technologies, etc.) as long as they are not relied upon to conform to any success criterion (i.e., the same information or functionality is also available another way that is supported).

The definition of "accessibility supported" is provided in the <u>Appendix A: Glossary</u> section of these guidelines. For more information, see <u>Understanding Accessibility Support</u>.

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 166 of 231 US This Season #17070909 Document #1715850 Filed: 01/31/2018 Page 420 of 537

Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive.

Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

Understanding Guideline 1.1

1.1.1 Non-text Content: All non-text content that is presented to the user has a <u>text</u> alternative that serves the equivalent purpose, except for the situations listed below. (Level A)

How to Meet 1.1.1 Understanding 1.1.1

- Controls, Input: If non-text content is a control or accepts user input, then it has a
 <u>name</u> that describes its purpose. (Refer to <u>Guideline 4.1</u> for additional requirements for
 controls and content that accepts user input.)
- Time-Based Media: If non-text content is time-based media, then text alternatives at least provide descriptive identification of the non-text content. (Refer to <u>Guideline 1.2</u> for additional requirements for media.)
- Test: If non-text content is a test or exercise that would be invalid if presented in text, then text alternatives at least provide descriptive identification of the non-text content.
- Sensory: If non-text content is primarily intended to create a specific sensory
 experience, then text alternatives at least provide descriptive identification of the
 non-text content.
- CAPTCHA: If the purpose of non-text content is to confirm that content is being
 accessed by a person rather than a computer, then text alternatives that identify and
 describe the purpose of the non-text content are provided, and alternative forms of
 CAPTCHA using output modes for different types of sensory perception are provided to
 accommodate different disabilities.
- **Decoration, Formatting, Invisible:** If non-text content is pure decoration, is used only for visual formatting, or is not presented to users, then it is implemented in a way that it can be ignored by assistive technology.

Guideline 1.2 Time-based Media: Provide alternatives for time-based media.

Understanding Guideline 1.2

6 of 28

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 167 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 421 of 53

1.2.1 Audio-only and Video-only (Prerecorded): For prerecorded <u>audio-only</u> and prerecorded <u>video-only</u> media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such: (Level A)

How to Meet 1.2.1 Understanding 1.2.1

- **Prerecorded Audio-only:** An alternative for time-based media is provided that presents equivalent information for prerecorded audio-only content.
- **Prerecorded Video-only:** Either an alternative for time-based media or an audio track is provided that presents equivalent information for prerecorded video-only content.
- **1.2.2 Captions (Prerecorded):** Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)

How to Meet 1.2.2 Understanding 1.2.2

1.2.3 Audio Description or Media Alternative (Prerecorded): An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such. (Level A)

How to Meet 1.2.3 Understanding 1.2.3

1.2.4 Captions (Live): Captions are provided for all <u>live</u> <u>audio</u> content in <u>synchronized media</u>. (Level AA)

How to Meet 1.2.4 Understanding 1.2.4

1.2.5 Audio Description (Prerecorded): <u>Audio description</u> is provided for all <u>prerecorded</u> video content in synchronized media. (Level AA)

How to Meet 1.2.5 Understanding 1.2.5

1.2.6 Sign Language (Prerecorded): Sign language interpretation is provided for all prerecorded audio content in synchronized media. (Level AAA)

How to Meet 1.2.6 Understanding 1.2.6

1.2.7 Extended Audio Description (Prerecorded): Where pauses in foreground audio are insufficient to allow <u>audio descriptions</u> to convey the sense of the video, <u>extended audio</u> description is provided for all prerecorded video content in synchronized media. (Level AAA)

How to Meet 1.2.7 Understanding 1.2.7

1.2.8 Media Alternative (Prerecorded): An alternative for time-based media is provided for all prerecorded synchronized media and for all prerecorded video-only media. (Level AAA)

How to Meet 1.2.8 Understanding 1.2.8

1.2.9 Audio-only (Live): An alternative for time-based media that presents equivalent information for live audio-only content is provided. (Level AAA)

How to Meet 1.2.9 Understanding 1.2.9

Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

Understanding Guideline 1.3

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 168 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 422 of 53

1.3.1 Info and Relationships: Information, <u>structure</u>, and <u>relationships</u> conveyed through presentation can be programmatically determined or are available in text. (Level A)

How to Meet 1.3.1 Understanding 1.3.1

1.3.2 Meaningful Sequence: When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined. (Level A)

How to Meet 1.3.2 Understanding 1.3.2

1.3.3 Sensory Characteristics: Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound. (Level A)

How to Meet 1.3.3 Understanding 1.3.3

Note: For requirements related to color, refer to <u>Guideline 1.4</u>.

Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.

Understanding Guideline 1.4

1.4.1 Use of Color: Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. (Level A) *Note:* This success criterion addresses color perception specifically. Other forms of perception are covered in <u>Guideline 1.3</u> including programmatic access to color and other visual presentation coding.

How to Meet 1.4.1 Understanding 1.4.1

1.4.2 Audio Control: If any audio on a Web page plays automatically for more than 3 seconds, either a <u>mechanism</u> is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level. (Level A)

How to Meet 1.4.2 Understanding 1.4.2

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether or not it is used to meet other success criteria) must meet this success criterion. See <u>Conformance Requirement 5:</u> Non-Interference.

1.4.3 Contrast (Minimum): The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: (Level AA)

How to Meet 1.4.3 Understanding 1.4.3

- Large Text: Large-scale text and images of large-scale text have a contrast ratio of at least 3:1:
- **Incidental:** Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no minimum contrast requirement.
- **1.4.4 Resize text:** Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality. (Level AA)

How to Meet 1.4.4 Understanding 1.4.4

1.4.5 Images of Text: If the technologies being used can achieve the visual presentation, <u>text</u> is used to convey information rather than images of text except for the following: (Level AA)

How to Meet 1.4.5 Understanding 1.4.5

- **Customizable:** The image of text can be <u>visually customized</u> to the user's requirements;
- **Essential:** A particular presentation of text is <u>essential</u> to the information being conveyed.

Note: Logotypes (text that is part of a logo or brand name) are considered essential.

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Case 1:13-cy-01215-TSC Document 122-6 Filed 12/22/15 Page 169 of USCA-6-Sentrast (Engineer) of text and images of text and imag

- Large Text: Large-scale text and images of large-scale text have a contrast ratio of at least 4.5:1;
- Incidental: Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no minimum contrast requirement.
- **1.4.7 Low or No Background Audio:** For prerecorded <u>audio-only</u> content that (1) contains primarily speech in the foreground, (2) is not an audio <u>CAPTCHA</u> or audio logo, and (3) is not vocalization intended to be primarily musical expression such as singing or rapping, at least one of the following is true: (Level AAA)

How to Meet 1.4.7 Understanding 1.4.7

- No Background: The audio does not contain background sounds.
- Turn Off: The background sounds can be turned off.
- 20 dB: The background sounds are at least 20 decibels lower than the foreground speech content, with the exception of occasional sounds that last for only one or two seconds.

Note: Per the definition of "decibel," background sound that meets this requirement will be approximately four times quieter than the foreground speech content.

1.4.8 Visual Presentation: For the visual presentation of <u>blocks of text</u>, a <u>mechanism</u> is available to achieve the following: (Level AAA)

How to Meet 1.4.8 Understanding 1.4.8

- 1. Foreground and background colors can be selected by the user.
- 2. Width is no more than 80 characters or glyphs (40 if CJK).
- 3. Text is not justified (aligned to both the left and the right margins).
- 4. Line spacing (leading) is at least space-and-a-half within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing.
- 5. Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text on a full-screen window.
- **1.4.9 Images of Text (No Exception):** Images of text are only used for <u>pure decoration</u> or where a particular presentation of <u>text</u> is <u>essential</u> to the information being conveyed. (Level AAA)

How to Meet 1.4.9 Understanding 1.4.9

Note: Logotypes (text that is part of a logo or brand name) are considered essential.

Principle 2: Operable - User interface components and navigation must be operable.

Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.

Understanding Guideline 2.1

2.1.1 Keyboard: All <u>functionality</u> of the content is operable through a <u>keyboard interface</u> without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints. (Level A)

How to Meet 2.1.1 Understanding 2.1.1

Note 1: This exception relates to the underlying function, not the input technique. For example, if using handwriting to enter text, the input technique (handwriting) requires path-dependent input but the underlying function (text input) does not.

Note 2: This does not forbid and should not discourage providing mouse input or other input methods in addition to keyboard operation. $\mathbf{JA1665}$

Case 1:13-cv-01215-TSC Document 122-6. Filed 12/22/15. Page 170 of 231
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a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away. (Level A)

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See <u>Conformance Requirement 5:</u> Non-Interference.

2.1.3 Keyboard (No Exception): All <u>functionality</u> of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. (Level AAA)

How to Meet 2.1.3 Understanding 2.1.3

Guideline 2.2 Enough Time: Provide users enough time to read and use content.

Understanding Guideline 2.2

How to Meet 2.2.1

2.2.1 Timing Adjustable: For each time limit that is set by the content, at least one of the following is true: (Level A)

Understanding 2.2.1

- Turn off: The user is allowed to turn off the time limit before encountering it; or
- Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or
- Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or
- Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or
- Essential Exception: The time limit is <u>essential</u> and extending it would invalidate the activity; or
- 20 Hour Exception: The time limit is longer than 20 hours.

Note: This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with <u>Success Criterion 3.2.1</u>, which puts limits on changes of content or context as a result of user action.

2.2.2 Pause, Stop, Hide: For moving, <u>blinking</u>, scrolling, or auto-updating information, all of the following are true: (Level A)

How to Meet 2.2.2 Understanding 2.2.2

- Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and
- Auto-updating: For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.
- Note 1: For requirements related to flickering or flashing content, refer to Guideline 2.3.
- Note 2: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See Conformance Requirement 5: Non-Interference.

Note 3: Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation. Left is may not be technically possible, and in many situations could be misleading to do so.

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 171 of 231 USCA/Otest Amanimation that pocular property of a preside phase of signal property of the page 425 of 53 considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.

2.2.3 No Timing: Timing is not an <u>essential</u> part of the event or activity presented by the content, except for non-interactive synchronized media and real-time events. (Level AAA)

How to Meet 2.2.3 Understanding 2.2.3

2.2.4 Interruptions: Interruptions can be postponed or suppressed by the user, except interruptions involving an emergency. (Level AAA)

How to Meet 2.2.4 Understanding 2.2.4

2.2.5 Re-authenticating: When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating. (Level AAA)

How to Meet 2.2.5 Understanding 2.2.5

Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.

Understanding Guideline 2.3

2.3.1 Three Flashes or Below Threshold: Web pages do not contain anything that flashes more than three times in any one second period, or the <u>flash</u> is below the general flash and red flash thresholds. (Level A)

How to Meet 2.3.1 Understanding 2.3.1

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See Conformance Requirement 5: Non-Interference.

2.3.2 Three Flashes: Web pages do not contain anything that <u>flashes</u> more than three times in any one second period. (Level AAA)

How to Meet 2.3.2 Understanding 2.3.2

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

Understanding Guideline 2.4

2.4.1 Bypass Blocks: A mechanism is available to bypass blocks of content that are repeated on multiple Web pages. (Level A)

How to Meet 2.4.1 Understanding 2.4.1

2.4.2 Page Titled: Web pages have titles that describe topic or purpose. (Level A)

How to Meet 2.4.2 Understanding 2.4.2

2.4.3 Focus Order: If a <u>Web page</u> can be <u>navigated sequentially</u> and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability. (Level A)

How to Meet 2.4.3 Understanding 2.4.3

2.4.4 Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. (Level A)

How to Meet 2.4.4 Understanding 2.4.4

2.4.5 Multiple Ways: More than one way is available to locate a <u>Web page</u> within a <u>set of</u> Web pages except where the Web Page is the **Job** Tor a step in, a process. (Level AA)

How to Meet 2.4.5 Understanding 2.4.5 Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 172 of 231 USC**A: Calleadings/angc-abels**-deadlegs and/algas-describe topicale-ungose (Leves AA) Page 426

42 Howfto-Weet 2.4.6 Understanding 2.4.6

2.4.7 Focus Visible: Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. (Level AA)

How to Meet 2.4.7 Understanding 2.4.7

2.4.8 Location: Information about the user's location within a <u>set of Web pages</u> is available. (Level AAA)

How to Meet 2.4.8 Understanding 2.4.8

2.4.9 Link Purpose (Link Only): A mechanism is available to allow the purpose of each link to be identified from link text alone, except where the purpose of the link would be ambiguous to users in general. (Level AAA)

How to Meet 2.4.9 Understanding 2.4.9

2.4.10 Section Headings: Section headings are used to organize the content. (Level AAA)

How to Meet 2.4.10 Understanding 2.4.10

Note 1: "Heading" is used in its general sense and includes titles and other ways to add a heading to different types of content.

Note 2: This success criterion covers sections within writing, not <u>user interface components</u>. User Interface components are covered under <u>Success Criterion 4.1.2</u>.

Principle 3: Understandable - Information and the operation of user interface must be understandable.

Guideline 3.1 Readable: Make text content readable and understandable.

Understanding Guideline 3.1

3.1.1 Language of Page: The default <u>human language</u> of each <u>Web page</u> can be programmatically determined. (Level A)

How to Meet 3.1.1 Understanding 3.1.1

3.1.2 Language of Parts: The <u>human language</u> of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text. (Level AA)

How to Meet 3.1.2 Understanding 3.1.2

3.1.3 Unusual Words: A mechanism is available for identifying specific definitions of words or phrases used in an unusual or restricted way, including idioms and jargon. (Level AAA)

How to Meet 3.1.3 Understanding 3.1.3

3.1.4 Abbreviations: A <u>mechanism</u> for identifying the expanded form or meaning of abbreviations is available. (Level AAA)

How to Meet 3.1.4 Understanding 3.1.4

3.1.5 Reading Level: When text requires reading ability more advanced than the <u>lower</u> secondary education level after removal of proper names and titles, supplemental content, or a version that does not require reading ability more advanced than the lower secondary education level, is available. (Level AAA)

How to Meet 3.1.5 Understanding 3.1.5

3.1.6 Pronunciation: A mechanism is available for identifying specific pronunciation of words where meaning of the words, in context, is ambiguous without knowing the pronunciation. (Level AAA)

How to Meet 3.1.6 Understanding 3.1.6 Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 173 of 231 CAU DELINE #12 Predictable Make Myed pages appear and pegaje 1/2018 Page 427 of 53 predictable ways.

3.2.1 On Focus: When any component receives focus, it does not initiate a <u>change of</u> context. (Level A)

How to Meet 3.2.1 Understanding 3.2.1

3.2.2 On Input: Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component. (Level A)

How to Meet 3.2.2 Understanding 3.2.2

3.2.3 Consistent Navigation: Navigational mechanisms that are repeated on multiple <u>Web pages</u> within a <u>set of Web pages</u> occur in the <u>same relative order</u> each time they are repeated, unless a change is initiated by the user. (Level AA)

How to Meet 3.2.3 Understanding 3.2.3

3.2.4 Consistent Identification: Components that have the <u>same functionality</u> within a set of Web pages are identified consistently. (Level AA)

How to Meet 3.2.4 Understanding 3.2.4

3.2.5 Change on Request: Changes of context are initiated only by user request or a mechanism is available to turn off such changes. (Level AAA)

How to Meet 3.2.5 Understanding 3.2.5

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.

<u>Understanding Guideline 3.3</u>

3.3.1 Error Identification: If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text. (Level A)

How to Meet 3.3.1 Understanding 3.3.1

3.3.2 Labels or Instructions: <u>Labels</u> or instructions are provided when content requires user input. (Level A)

How to Meet 3.3.2 Understanding 3.3.2

3.3.3 Error Suggestion: If an <u>input error</u> is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content. (Level AA)

How to Meet 3.3.3 Understanding 3.3.3

3.3.4 Error Prevention (Legal, Financial, Data): For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: (Level AA)

How to Meet 3.3.4 Understanding 3.3.4

- 1. Reversible: Submissions are reversible.
- 2. **Checked:** Data entered by the user is checked for <u>input errors</u> and the user is provided an opportunity to correct them.
- 3. **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

3.3.5 Help: Context-sensitive help is available. (Level AAA)

How to Meet 3.3.5 Understanding 3.3.5

3.3.6 Error Prevention (AII): For Web pages that require the user to submit information, at least one of the following is true: (Level AAA) JA1069

1. Reversible: Submissions are reversible.

How to Meet 3.3.6 Understanding 3.3.6 Case 1:13-cy-01215-TSC. Document 122-6 Filed 12/22/15 Page 174 of 231 USCA (2a Shesked 7 bags entered by the Heet 15/cheshed for input Files and the province 428 of 537 an opportunity to correct them.

3. **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

Understanding Guideline 4.1

4.1.1 Parsing: In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. (Level A)

How to Meet 4.1.1 Understanding 4.1.1

Note: Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.

4.1.2 Name, Role, Value: For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies. (Level A)

How to Meet 4.1.2 Understanding 4.1.2

Note: This success criterion is primarily for Web authors who develop or script their own user interface components. For example, standard HTML controls already meet this success criterion when used according to specification.

Conformance

This section is normative.

This section lists requirements for <u>conformance</u> to WCAG 2.0. It also gives information about how to make conformance claims, which are optional. Finally, it describes what it means to be <u>accessibility supported</u>, since only accessibility-supported ways of using technologies can be <u>relied upon</u> for conformance. <u>Understanding Conformance</u> includes further explanation of the accessibility-supported concept.

Conformance Requirements

In order for a Web page to conform to WCAG 2.0, all of the following conformance requirements must be satisfied:

- 1. Conformance Level: One of the following levels of conformance is met in full.
 - Level A: For Level A conformance (the minimum level of conformance), the Web page satisfies all the Level A Success Criteria, or a conforming alternate version is provided.
 - Level AA: For Level AA conformance, the Web page satisfies all the Level A and Level AA Success Criteria, or a Level AA conforming alternate version is provided.
 - Level AAA: For Level AAA conformance, the Web page satisfies all the Level A, Level AA and Level AAA Success Criteria, or a Level AAA conforming alternate version is provided.

Note 1: Although conformance can only be achieved at the stated levels, authors are encouraged to report (in their claim) any progress toward meeting success criteria from all levels beyond the achieved level of conformance.

Note 2: It is not recommended that Level AAA conformative be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content.

Case 1:13-cv-01215-TSC Document 122-6. Filed 12/22/15. Page 175 of 231
US & Full 239 937 Conformance (and conformance lengths for full Welp 2399(\$) 301/2 01 05 cannot be excluded.

Note 1: For the purpose of determining conformance, alternatives to part of a page's content are considered part of the page when the alternatives can be obtained directly from the page, e.g., a long description or an alternative presentation of a video.

Note 2: Authors of Web pages that cannot conform due to content outside of the author's control may consider a Statement of Partial Conformance.

3. Complete processes: When a <u>Web page</u> is one of a series of Web pages presenting a <u>process</u> (i.e., a sequence of steps that need to be completed in order to accomplish an activity), all Web pages in the process conform at the specified level or better. (Conformance is not possible at a particular level if any page in the process does not conform at that level or better.)

Example: An online store has a series of pages that are used to select and purchase products. All pages in the series from start to finish (checkout) conform in order for any page that is part of the process to conform.

- **4.** Only Accessibility-Supported Ways of Using Technologies: Only accessibility-supported ways of using technologies are relied upon to satisfy the success criteria. Any information or functionality that is provided in a way that is not accessibility supported is also available in a way that is accessibility supported. (See <u>Understanding accessibility support</u>.)
- **5. Non-Interference:** If technologies are used in a way that is not accessibility supported, or if they are used in a non-conforming way, then they do not block the ability of users to access the rest of the page. In addition, the Web page as a whole continues to meet the conformance requirements under each of the following conditions:
 - 1. when any technology that is not relied upon is turned on in a user agent,
 - 2. when any technology that is not relied upon is turned off in a user agent, and
 - 3. when any technology that is not relied upon is not supported by a user agent

In addition, the following success criteria apply to all content on the page, including content that is not otherwise relied upon to meet conformance, because failure to meet them could interfere with any use of the page:

- 1.4.2 Audio Control,
- 2.1.2 No Keyboard Trap,
- 2.3.1 Three Flashes or Below Threshold, and
- 2.2.2 Pause, Stop, Hide.

Note: If a page cannot conform (for example, a conformance test page or an example page), it cannot be included in the scope of conformance or in a conformance claim.

For more information, including examples, see <u>Understanding Conformance Requirements</u>.

Conformance Claims (Optional)

Conformance is defined only for <u>Web pages</u>. However, a conformance claim may be made to cover one page, a series of pages, or multiple related Web pages.

Required Components of a Conformance Claim

Conformance claims are **not required**. Authors can conform to WCAG 2.0 without making a claim. However, if a conformance claim is made, then the conformance claim **must** include the following information:

- 1. Date of the claim
- Guidelines title, version and URI "Web Content Accessibility Guidelines 2.0 at http://www.w3.org/TR/2008/PEC-WCAG20-20081211/"
- 3. Conformance level satisfied: (Level A, AA or AAA)
- 4. A concise description of the Web pages, such as a list of URIs for which the claim is made, including whether subdomains are included in the claim.
 - Note 1: The Web pages may be described by list or by an expression that describes all of the URIs included in the claim.
 - *Note 2:* Web-based products that do not have a URI prior to installation on the customer's Web site may have a statement that the product would conform when installed.
- 5. A list of the Web content technologies relied upon.

Case 1:13-cv-01215-TSC. Document 122-6. Filed 12/22/15. Page 176 of 231

USCYCLE List conformance claim listed above.

Optional Components of a Conformance Claim

In addition to the required components of a conformance claim above, consider providing additional information to assist users. Recommended additional information includes:

- A list of success criteria beyond the level of conformance claimed that have been met. This information should be provided in a form that users can use, preferably machine-readable metadata.
- A list of the specific technologies that are "used but not relied upon."
- A list of user agents, including assistive technologies that were used to test the content.
- Information about any additional steps taken that go beyond the success criteria to enhance accessibility.
- A machine-readable metadata version of the list of specific technologies that are relied upon.
- A machine-readable metadata version of the conformance claim.
- Note 1: Refer to <u>Understanding Conformance Claims</u> for more information and example conformance claims.
- Note 2: Refer to Understanding Metadata for more information about the use of metadata in conformance claims.

Statement of Partial Conformance - Third Party Content

Sometimes, Web pages are created that will later have additional content added to them. For example, an email program, a blog, an article that allows users to add comments, or applications supporting user-contributed content. Another example would be a page, such as a portal or news site, composed of content aggregated from multiple contributors, or sites that automatically insert content from other sources over time, such as when advertisements are inserted dynamically.

In these cases, it is not possible to know at the time of original posting what the uncontrolled content of the pages will be. It is important to note that the uncontrolled content can affect the accessibility of the controlled content as well. Two options are available:

- A determination of conformance can be made based on best knowledge. If a page of this type is monitored and
 repaired (non-conforming content is removed or brought into conformance) within two business days, then a
 determination or claim of conformance can be made since, except for errors in externally contributed content which
 are corrected or removed when encountered, the page conforms. No conformance claim can be made if it is not
 possible to monitor or correct non-conforming content;
 - OR

 A "statement of partial conformance
- 2. A "statement of partial conformance" may be made that the page does not conform, but could conform if certain parts were removed. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.0 at level X if the following parts from uncontrolled sources were removed." In addition, the following would also be true of uncontrolled content that is described in the statement of partial conformance:
 - a. It is not content that is under the author's control.
 - b. It is described in a way that users can identify (e.g., they cannot be described as "all parts that we do not control" unless they are clearly marked as such.)

Statement of Partial Conformance - Language

A "statement of partial conformance due to language" may be made when the page does not conform, but would conform if accessibility support existed for (all of) the language(s) used on the page. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.0 at level X if accessibility support existed for the following language(s):"

Appendix A: Glossary

This section is normative.

abbreviation

shortened form of a word, phrase, or name where the abbreviation has not become part of the language *Note 1:* This includes initialisms and acronyms where:

1. **initialisms** are shortened forms of parage phrase made from the initial letters of words or syllables contained in that name or phrase

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 177 of 231 USCA Case #17/07/03/9\text{Not defined mah languages} Filed: 01/31/2018 Page 431 of 53

Example 1: SNCF is a French initialism that contains the initial letters of the Société Nationale des Chemins de Fer, the French national railroad.

Example 2: ESP is an initialism for extrasensory perception.

2. **acronyms** are abbreviated forms made from the initial letters or parts of other words (in a name or phrase) which may be pronounced as a word

Example: NOAA is an acronym made from the initial letters of the National Oceanic and Atmospheric Administration in the United States.

Note 2: Some companies have adopted what used to be an initialism as their company name. In these cases, the new name of the company is the letters (for example, Ecma) and the word is no longer considered an abbreviation.

accessibility supported

AND

supported by users' <u>assistive technologies</u> as well as the accessibility features in browsers and other <u>user agents</u> To qualify as an accessibility-supported use of a Web content technology (or feature of a technology), both 1 and 2 must be satisfied for a Web content technology (or feature):

 The way that the Web content technology is used must be supported by users' assistive technology (AT). This means that the way that the technology is used has been tested for interoperability with users' assistive technology in the human language(s) of the content,

- 2. The Web content technology must have accessibility-supported user agents that are available to users. This means that at least one of the following four statements is true:
 - a. The technology is supported natively in widely-distributed user agents that are also accessibility supported (such as HTML and CSS);
 OR
 - b. The technology is supported in a widely-distributed plug-in that is also accessibility supported; **OR**
 - c. The content is available in a closed environment, such as a university or corporate network, where the
 user agent required by the technology and used by the organization is also accessibility supported;
 OR
 - d. The user agent(s) that support the technology are accessibility supported and are available for download or purchase in a way that:
 - does not cost a person with a disability any more than a person without a disability and
 - is as easy to find and obtain for a person with a disability as it is for a person without disabilities.

Note 1: The WCAG Working group and the W3C do not specify which or how much support by assistive technologies there must be for a particular use of a Web technology in order for it to be classified as accessibility supported. (See Level of Assistive Technology Support Needed for "Accessibility Support".)

Note 2: Web technologies can be used in ways that are not accessibility supported as long as they are not relied upon and the page as a whole meets the conformance requirements, including Conformance Requirement 4: Only Accessibility-Supported Ways of Using Technologies and Conformance Requirement 5: Non-Interference, are met.

Note 3: When a Web Technology is used in a way that is "accessibility supported," it does not imply that the entire technology or all uses of the technology are supported. Most technologies, including HTML, lack support for at least one feature or use. Pages conform to WCAG only if the uses of the technology that are accessibility supported can be relied upon to meet WCAG requirements.

Note 4: When citing Web content technologies that have multiple versions, the version(s) supported should be specified.

Note 5: One way for authors to locate uses of a technology that are accessibility supported would be to consult compilations of uses that are documented to be accessibility supported. (See <u>Understanding Accessibility-Supported Web Technology Uses.</u>) Authors, companies, technology vendors, or others may document accessibility-supported ways of using Web content technologies. However, all ways of using technologies in the documentation would need to meet the definition of accessibility-supported Web content technologies above.

alternative for time-based media

document including correctly sequenced text descriptions of time-based visual and auditory information and providing a means for achieving the outcomes of any time-based interaction

Note: A screenplay used to create the synchronized media content would meet this definition only if it was corrected

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 178 of 231 USCA Case courate to represent the limit by nehrophic diagram of the limi

ambiguous to users in general

the purpose cannot be determined from the link and all information of the Web page presented to the user simultaneously with the link (i.e., readers without disabilities would not know what a link would do until they activated it)

Example: The word guava in the following sentence "One of the notable exports is guava" is a link. The link could lead to a definition of guava, a chart listing the quantity of guava exported or a photograph of people harvesting guava. Until the link is activated, all readers are unsure and the person with a disability is not at any disadvantage.

ASCII art

picture created by a spatial arrangement of characters or glyphs (typically from the 95 printable characters defined by ASCII).

assistive technology (as used in this document)

hardware and/or software that acts as a <u>user agent</u>, or along with a mainstream user agent, to provide functionality to meet the requirements of users with disabilities that go beyond those offered by mainstream user agents

Note 1: functionality provided by assistive technology includes alternative presentations (e.g., as synthesized speech or magnified content), alternative input methods (e.g., voice), additional navigation or orientation mechanisms, and content transformations (e.g., to make tables more accessible).

Note 2: Assistive technologies often communicate data and messages with mainstream user agents by using and monitoring APIs.

Note 3: The distinction between mainstream user agents and assistive technologies is not absolute. Many mainstream user agents provide some features to assist individuals with disabilities. The basic difference is that mainstream user agents target broad and diverse audiences that usually include people with and without disabilities. Assistive technologies target narrowly defined populations of users with specific disabilities. The assistance provided by an assistive technology is more specific and appropriate to the needs of its target users. The mainstream user agent may provide important functionality to assistive technologies like retrieving Web content from program objects or parsing markup into identifiable bundles.

Example: Assistive technologies that are important in the context of this document include the following:

- screen magnifiers, and other visual reading assistants, which are used by people with visual, perceptual and
 physical print disabilities to change text font, size, spacing, color, synchronization with speech, etc. in order to
 improve the visual readability of rendered text and images;
- screen readers, which are used by people who are blind to read textual information through synthesized speech or braille;
- text-to-speech software, which is used by some people with cognitive, language, and learning disabilities to convert text into synthetic speech;
- speech recognition software, which may be used by people who have some physical disabilities;
- alternative keyboards, which are used by people with certain physical disabilities to simulate the keyboard (including alternate keyboards that use head pointers, single switches, sip/puff and other special input devices.);
- alternative pointing devices, which are used by people with certain physical disabilities to simulate mouse pointing and button activations.

audio

the technology of sound reproduction

Note: Audio can be created synthetically (including speech synthesis), recorded from real world sounds, or both.

audio description

narration added to the soundtrack to describe important visual details that cannot be understood from the main soundtrack alone

Note 1: Audio description of video provides information about actions, characters, scene changes, on-screen text, and other visual content.

Note 2: In standard audio description, narration is added during existing pauses in dialogue. (See also extended audio description.)

Note 3: Where all of the video information is already provided in existing audio, no additional audio description is necessary.

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 179 of 231 USCA Case #17 Isporation | Video description | Video desc

audio-only

a time-based presentation that contains only audio (no video and no interaction)

blinking

switch back and forth between two visual states in a way that is meant to draw attention

Note: See also <u>flash</u>. It is possible for something to be large enough and blink brightly enough at the right frequency to be also classified as a flash.

blocks of text

more than one sentence of text

CAPTCHA

initialism for "Completely Automated Public Turing test to tell Computers and Humans Apart"

Note 1: CAPTCHA tests often involve asking the user to type in text that is displayed in an obscured image or audio file.

Note 2: A Turing test is any system of tests designed to differentiate a human from a computer. It is named after famed computer scientist Alan Turing. The term was coined by researchers at Carnegie Mellon University. [CAPTCHA]

captions

synchronized visual and/or text alternative for both speech and non-speech audio information needed to understand the media content

- *Note 1:* Captions are similar to dialogue-only subtitles except captions convey not only the content of spoken dialogue, but also equivalents for non-dialogue audio information needed to understand the program content, including sound effects, music, laughter, speaker identification and location.
- Note 2: Closed Captions are equivalents that can be turned on and off with some players.
- Note 3: Open Captions are any captions that cannot be turned off. For example, if the captions are visual equivalent images of text embedded in video.
- *Note 4:* Captions should not obscure or obstruct relevant information in the video.
- Note 5: In some countries, captions are called subtitles.
- *Note 6:* <u>Audio descriptions</u> can be, but do not need to be, captioned since they are descriptions of information that is already presented visually.

changes of context

major changes in the content of the Web page that, if made without user awareness, can disorient users who are not able to view the entire page simultaneously

Changes in context include changes of:

- 1. user agent;
- 2. viewport;
- 3. focus;
- 4. content that changes the meaning of the Web page.

Note: A change of content is not always a change of context. Changes in content, such as an expanding outline, dynamic menu, or a tab control do not necessarily change the context, unless they also change one of the above (e.g., focus).

Example: Opening a new window, moving focus to a different component, going to a new page (including anything that would look to a user as if they had moved to a new page) or significantly re-arranging the content of a page are examples of changes of context.

conformance

satisfying all the requirements of a given standard, guideline or specification

conforming alternate version

version that

- 1. conforms at the designated level, and
- 2. provides all of the same information and functionality in the same human language, and
- 3. is as up to date as the non-conforming content, and

Case 1:13-cv-01215-TSC, Document 122-6 Filed 12/22/15 Page 180 of 231 USCA Case # 197 ԿԻՆՑ GT leas 100% ԹԻՆՑ ՄԻՆՑ Filed: 01/31/2018 Page 434 of 537

- a. the conforming version can be reached from the non-conforming page via an <u>accessibility-supported</u> mechanism, or
- b. the non-conforming version can only be reached from the conforming version, or
- c. the non-conforming version can only be reached from a conforming page that also provides a mechanism to reach the conforming version
- Note 1: In this definition, "can only be reached" means that there is some mechanism, such as a conditional redirect, that prevents a user from "reaching" (loading) the non-conforming page unless the user had just come from the conforming version.
- Note 2: The alternate version does not need to be matched page for page with the original (e.g., the conforming alternate version may consist of multiple pages).
- *Note 3:* If multiple language versions are available, then conforming alternate versions are required for each language offered.
- Note 4: Alternate versions may be provided to accommodate different technology environments or user groups. Each version should be as conformant as possible. One version would need to be fully conformant in order to meet conformance requirement 1.
- *Note 5:* The conforming alternative version does not need to reside within the scope of conformance, or even on the same Web site, as long as it is as freely available as the non-conforming version.
- *Note 6:* Alternate versions should not be confused with <u>supplementary content</u>, which support the original page and enhance comprehension.
- *Note 7:* Setting user preferences within the content to produce a conforming version is an acceptable mechanism for reaching another version as long as the method used to set the preferences is accessibility supported.

See Understanding Conforming Alternate Versions

content (Web content)

information and sensory experience to be communicated to the user by means of a <u>user agent</u>, including code or markup that defines the content's structure, presentation, and interactions

context-sensitive help

help text that provides information related to the function currently being performed

Note: Clear labels can act as context-sensitive help.

contrast ratio

(L1 + 0.05) / (L2 + 0.05), where

- L1 is the relative luminance of the lighter of the colors, and
- L2 is the relative luminance of the darker of the colors.
- Note 1: Contrast ratios can range from 1 to 21 (commonly written 1:1 to 21:1).
- Note 2: Because authors do not have control over user settings as to how text is rendered (for example font smoothing or anti-aliasing), the contrast ratio for text can be evaluated with anti-aliasing turned off.
- *Note 3:* For the purpose of Success Criteria 1.4.3 and 1.4.6, contrast is measured with respect to the specified background over which the text is rendered in normal usage. If no background color is specified, then white is assumed.
- Note 4: Background color is the specified color of content over which the text is to be rendered in normal usage. It is a failure if no background color is specified when the text color is specified, because the user's default background color is unknown and cannot be evaluated for sufficient contrast. For the same reason, it is a failure if no text color is specified when a background color is specified.
- *Note 5:* When there is a border around the letter, the border can add contrast and would be used in calculating the contrast between the letter and its background. A narrow border around the letter would be used as the letter. A wide border around the letter that fills in the inner details of the letters acts as a halo and would be considered background.

Note 6: WCAG conformance should be evaluated for color pairs specified in the content that an author would expect to appear adjacent in typical presentation. Authors need not consider unusual presentations, such as color changes made by the user agent, except where caused by authors' code.

correct reading sequence

JA1676

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 181 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 435 of 53

emergency

a sudden, unexpected situation or occurrence that requires immediate action to preserve health, safety, or property

essential

if removed, would fundamentally change the information or functionality of the content, **and** information and functionality cannot be achieved in another way that would conform

extended audio description

audio description that is added to an audiovisual presentation by pausing the $\underline{\text{video}}$ so that there is time to add additional description

Note: This technique is only used when the sense of the <u>video</u> would be lost without the additional <u>audio description</u> and the pauses between dialogue/narration are too short.

flash

a pair of opposing changes in <u>relative luminance</u> that can cause seizures in some people if it is large enough and in the right frequency range

Note 1: See general flash and red flash thresholds for information about types of flash that are not allowed.

Note 2: See also blinking.

functionality

processes and outcomes achievable through user action

general flash and red flash thresholds

a <u>flash</u> or rapidly changing image sequence is below the threshold (i.e., content **passes**) if any of the following are true:

- 1. there are no more than three **general flashes** and / or no more than three **red flashes** within any one-second period; or
- the combined area of flashes occurring concurrently occupies no more than a total of .006 steradians within any 10 degree visual field on the screen (25% of any 10 degree visual field on the screen) at typical viewing distance

where:

- A general flash is defined as a pair of opposing changes in <u>relative luminance</u> of 10% or more of the
 maximum relative luminance where the relative luminance of the darker image is below 0.80; and where "a pair
 of opposing changes" is an increase followed by a decrease, or a decrease followed by an increase, and
- A red flash is defined as any pair of opposing transitions involving a saturated red.

Exception: Flashing that is a fine, balanced, pattern such as white noise or an alternating checkerboard pattern with "squares" smaller than 0.1 degree (of visual field at typical viewing distance) on a side does not violate the thresholds.

Note 1: For general software or Web content, using a 341 x 256 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 x 768 pixels will provide a good estimate of a 10 degree visual field for standard screen sizes and viewing distances (e.g., 15-17 inch screen at 22-26 inches). (Higher resolutions displays showing the same rendering of the content yield smaller and safer images so it is lower resolutions that are used to define the thresholds.)

Note 2: A transition is the change in relative luminance (or relative luminance/color for red flashing) between adjacent peaks and valleys in a plot of relative luminance (or relative luminance/color for red flashing) measurement against time. A flash consists of two opposing transitions.

Note 3: The current working definition in the field for "pair of opposing transitions involving a saturated red" is where, for either or both states involved in each transition, R/(R+G+B) >= 0.8, and the change in the value of (R-G-B)x320 is > 20 (negative values of (R-G-B)x320 are set to zero) for both transitions. R, G, G0, G1 values range from 0-1 as specified in "relative luminance" definition. [HARDING-BINNIE]

Note 4: Tools are available that will carry out analysis from video screen capture. However, no tool is necessary to evaluate for this condition if flashing is less than or equal to 3 flashes in any one second. Content automatically passes (see #1 and #2 above).

human language

language that is spoken, written or signed (through visual or tactile means) to communicate with humans *Note:* See also sign language. **JA1677**

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 182 of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA Of 231 USCA OF 2

Note: idioms cannot be translated directly, word for word, without losing their (cultural or language-dependent) meaning.

Example 1: In English, "spilling the beans" means "revealing a secret." However, "knocking over the beans" or "spilling the vegetables" does not mean the same thing.

Example 2: In Japanese, the phrase "さじを投げる" literally translates into "he throws a spoon," but it means that there is nothing he can do and finally he gives up.

Example 3: In Dutch, "Hij ging met de kippen op stok" literally translates into "He went to roost with the chickens," but it means that he went to bed early.

image of text

text that has been rendered in a non-text form (e.g., an image) in order to achieve a particular visual effect

Note: This does not include text that is part of a picture that contains significant other visual content.

Example: A person's name on a nametag in a photograph.

informative

for information purposes and not required for conformance

Note: Content required for conformance is referred to as "normative."

input error

information provided by the user that is not accepted

Note: This includes:

- 1. Information that is required by the Web page but omitted by the user
- 2. Information that is provided by the user but that falls outside the required data format or values

jargon

words used in a particular way by people in a particular field

Example: The word StickyKeys is jargon from the field of assistive technology/accessibility.

keyboard interface

interface used by software to obtain keystroke input

Note 1: A keyboard interface allows users to provide keystroke input to programs even if the native technology does not contain a keyboard.

Example: A touchscreen PDA has a keyboard interface built into its operating system as well as a connector for external keyboards. Applications on the PDA can use the interface to obtain keyboard input either from an external keyboard or from other applications that provide simulated keyboard output, such as handwriting interpreters or speech-to-text applications with "keyboard emulation" functionality.

Note 2: Operation of the application (or parts of the application) through a keyboard-operated mouse emulator, such as MouseKeys, does not qualify as operation through a keyboard interface because operation of the program is through its pointing device interface, not through its keyboard interface.

label

text or other component with a text alternative that is presented to a user to identify a component within Web content

Note 1: A label is presented to all users whereas the <u>name</u> may be hidden and only exposed by assistive technology. In many (but not all) cases the name and the label are the same.

Note 2: The term label is not limited to the label element in HTML.

large scale (text)

with at least 18 point or 14 point bold or font size that would yield equivalent size for Chinese, Japanese and Korean (CJK) fonts

- *Note 1:* Fonts with extraordinarily thin strokes or unusual features and characteristics that reduce the familiarity of their letter forms are harder to read, especially at lower contrast levels.
- Note 2: Font size is the size when the content is delivered. It does not include resizing that may be done by a user.
- Note 3: The actual size of the character the least sees is dependent both on the author-defined size and the user's display or user-agent settings. For many mainstream body text fonts, 14 and 18 point is roughly equivalent to 1.2 and

Case 1:13-cy-01215-TSC. Document 122-6. Filed 12/22/15. Page 183 of 231. USCA Case more poly of the control of the particular fonts in use. When fonts are defined in relative units, the actual point size is calculated by the user agent for display. The point size should be obtained from the user agent, or calculated based on font metrics as the user agent does, when evaluating this success criterion. Users who have low vision would be responsible for choosing appropriate settings.

Note 4: When using text without specifying the font size, the smallest font size used on major browsers for unspecified text would be a reasonable size to assume for the font. If a level 1 heading is rendered in 14pt bold or higher on major browsers, then it would be reasonable to assume it is large text. Relative scaling can be calculated from the default sizes in a similar fashion.

Note 5: The 18 and 14 point sizes for roman texts are taken from the minimum size for large print (14pt) and the larger standard font size (18pt). For other fonts such as CJK languages, the "equivalent" sizes would be the minimum large print size used for those languages and the next larger standard large print size.

legal commitments

transactions where the person incurs a legally binding obligation or benefit

Example: A marriage license, a stock trade (financial and legal), a will, a loan, adoption, signing up for the army, a contract of any type, etc.

link purpose

nature of the result obtained by activating a hyperlink

live

information captured from a real-world event and transmitted to the receiver with no more than a broadcast delay

Note 1: A broadcast delay is a short (usually automated) delay, for example used in order to give the broadcaster time to queue or censor the audio (or video) feed, but not sufficient to allow significant editing.

Note 2: If information is completely computer generated, it is not live.

lower secondary education level

the two or three year period of education that begins after completion of six years of school and ends nine years after the beginning of primary education

Note: This definition is based on the International Standard Classification of Education [UNESCO].

mechanism

process or technique for achieving a result

Note 1: The mechanism may be explicitly provided in the content, or may be <u>relied upon</u> to be provided by either the platform or by user agents, including assistive technologies.

Note 2: The mechanism needs to meet all success criteria for the conformance level claimed.

media alternative for text

media that presents no more information than is already presented in text (directly or via text alternatives)

Note: A media alternative for text is provided for those who benefit from alternate representations of text. Media alternatives for text may be audio-only, video-only (including sign-language video), or audio-video.

name

text by which software can identify a component within Web content to the user

Note 1: The name may be hidden and only exposed by assistive technology, whereas a <u>label</u> is presented to all users. In many (but not all) cases, the label and the name are the same.

Note 2: This is unrelated to the name attribute in HTML.

navigated sequentially

navigated in the order defined for advancing focus (from one element to the next) using a keyboard interface

non-text content

any content that is not a sequence of characters that can be programmatically determined or where the sequence is not expressing something in human language

Note: This includes <u>ASCII Art</u> (which is a pattern of characters), emoticons, leetspeak (which uses character substitution), and images representing text

normative

JA1679

required for conformance

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 184 of 231 USCA Case #19 remay contour the earliest of the way rectains the contour contour the earliest of the contour contours and the contours and the contours and the contours and the contour contours and the contours and the contours and the contours and the contour contours and the contours and the contours and the contours and the contours and the contours and the contours and the contours and the contours and the contours and the contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the contour contours and the

Note 2: Content identified as "informative" or "non-normative" is never required for conformance.

on a full-screen window

on the most common sized desktop/laptop display with the viewport maximized

Note: Since people generally keep their computers for several years, it is best not to rely on the latest desktop/laptop display resolutions but to consider the common desktop/laptop display resolutions over the course of several years when making this evaluation.

paused

stopped by user request and not resumed until requested by user

prerecorded

information that is not live

presentation

rendering of the content in a form to be perceived by users

primary education level

six year time period that begins between the ages of five and seven, possibly without any previous education *Note:* This definition is based on the International Standard Classification of Education [UNESCO].

process

series of user actions where each action is required in order to complete an activity

Example 1: Successful use of a series of Web pages on a shopping site requires users to view alternative products, prices and offers, select products, submit an order, provide shipping information and provide payment information.

Example 2: An account registration page requires successful completion of a Turing test before the registration form can be accessed.

programmatically determined (programmatically determinable)

determined by software from author-supplied data provided in a way that different <u>user agents</u>, including <u>assistive</u> technologies, can extract and present this information to users in different modalities

Example 1: Determined in a markup language from elements and attributes that are accessed directly by commonly available assistive technology.

Example 2: Determined from technology-specific data structures in a non-markup language and exposed to assistive technology via an accessibility API that is supported by commonly available assistive technology.

programmatically determined link context

additional information that can be programmatically determined from relationships with a link, combined with the link text, and presented to users in different modalities

Example: In HTML, information that is programmatically determinable from a link in English includes text that is in the same paragraph, list, or table cell as the link or in a table header cell that is associated with the table cell that contains the link.

Note: Since screen readers interpret punctuation, they can also provide the context from the current sentence, when the focus is on a link in that sentence.

programmatically set

set by software using methods that are supported by user agents, including assistive technologies

pure decoration

serving only an aesthetic purpose, providing no information, and having no functionality

Note: Text is only purely decorative if the words can be rearranged or substituted without changing their purpose.

Example: The cover page of a dictionary has random words in very light text in the background.

real-time event

event that a) occurs at the same time as the viewing and b) is not completely generated by the content

Example 1: A Webcast of a live performance (occurs at the same time as the viewing and is not prerecorded).

Example 2: An on-line auction with people bidding (occurs at the same time as the viewing).

Example 3: Live humans interacting in a with a 680b using avatars (is not completely generated by the content and occurs at the same time as the viewing).

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 185 of 231 USelationship#17-7039 Document #1715850 Filed: 01/31/2018 Page 439 of 53

meaningful associations between distinct pieces of content

relative luminance

the relative brightness of any point in a colorspace, normalized to 0 for darkest black and 1 for lightest white

Note 1: For the sRGB colorspace, the relative luminance of a color is defined as L = 0.2126 * R + 0.7152 * G + 0.0722 * B where R, G and B are defined as:

- if $R_{sRGB} \le 0.03928$ then $\mathbf{R} = R_{sRGB}/12.92$ else $\mathbf{R} = ((R_{sRGB} + 0.055)/1.055) ^ 2.4$
- if $G_{sRGB} \le 0.03928$ then $G = G_{sRGB}/12.92$ else $G = ((G_{sRGB}+0.055)/1.055) ^ 2.4$
- if $B_{sRGB} \le 0.03928$ then **B** = $B_{sRGB} = ((B_{sRGB} + 0.055)/1.055) ^ 2.4$

and R_{sRGB}, G_{sRGB}, and B_{sRGB} are defined as:

- R_{sRGB} = R_{8bit}/255
- $G_{sRGB} = G_{8bit}/255$
- $B_{sRGB} = B_{8bit}/255$

The "^" character is the exponentiation operator. (Formula taken from [sRGB] and [IEC-4WD]).

Note 2: Almost all systems used today to view Web content assume sRGB encoding. Unless it is known that another color space will be used to process and display the content, authors should evaluate using sRGB colorspace. If using other color spaces, see <u>Understanding Success Criterion 1.4.3</u>.

Note 3: If dithering occurs after delivery, then the source color value is used. For colors that are dithered at the source, the average values of the colors that are dithered should be used (average R, average G, and average B).

Note 4: Tools are available that automatically do the calculations when testing contrast and flash.

Note 5: A MathML version of the relative luminance definition is available.

relied upon (technologies that are)

the content would not conform if that technology is turned off or is not supported

role

text or number by which software can identify the function of a component within Web content

Example: A number that indicates whether an image functions as a hyperlink, command button, or check box.

same functionality

same result when used

Example: A submit "search" button on one Web page and a "find" button on another Web page may both have a field to enter a term and list topics in the Web site related to the term submitted. In this case, they would have the same functionality but would not be labeled consistently.

same relative order

same position relative to other items

Note: Items are considered to be in the same relative order even if other items are inserted or removed from the original order. For example, expanding navigation menus may insert an additional level of detail or a secondary navigation section may be inserted into the reading order.

satisfies a success criterion

the success criterion does not evaluate to 'false' when applied to the page

section

A self-contained portion of written content that deals with one or more related topics or thoughts

Note: A section may consist of one or more paragraphs and include graphics, tables, lists and sub-sections.

set of Web pages

collection of Web pages that share a common purpose and that are created by the same author, group or organization *Note:* Different language versions would be considered different sets of Web pages.

sign language

a language using combinations of movements of the hands and arms, facial expressions, or body positions to convey meaning ${\bf JA1681}$

sign language interpretation

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 186 of 231 USCA CERSIATION OF BIANGUAGE PAGE 440 of 533

Note: True sign languages are independent languages that are unrelated to the spoken language(s) of the same country or region.

specific sensory experience

a sensory experience that is not purely decorative and does not primarily convey important information or perform a function

Example: Examples include a performance of a flute solo, works of visual art etc.

structure

- 1. The way the parts of a Web page are organized in relation to each other; and
- 2. The way a collection of Web pages is organized

supplemental content

additional content that illustrates or clarifies the primary content

- Example 1: An audio version of a Web page.
- Example 2: An illustration of a complex process.
- Example 3: A paragraph summarizing the major outcomes and recommendations made in a research study.

synchronized media

<u>audio</u> or <u>video</u> synchronized with another format for presenting information and/or with time-based interactive components, unless the media is a media alternative for text that is clearly labeled as such

technology (Web content)

mechanism for encoding instructions to be rendered, played or executed by user agents

Note 1: As used in these guidelines "Web Technology" and the word "technology" (when used alone) both refer to Web Content Technologies.

Note 2: Web content technologies may include markup languages, data formats, or programming languages that authors may use alone or in combination to create end-user experiences that range from static Web pages to synchronized media presentations to dynamic Web applications.

Example: Some common examples of Web content technologies include <u>HTML</u>, <u>CSS</u>, <u>SVG</u>, <u>PNG</u>, <u>PDF</u>, Flash, and JavaScript.

text

sequence of characters that can be <u>programmatically determined</u>, where the sequence is expressing something in human language

text alternative

<u>Text</u> that is programmatically associated with <u>non-text content</u> or referred to from text that is programmatically associated with non-text content. Programmatically associated text is text whose location can be programmatically determined from the non-text content.

Example: An image of a chart is described in text in the paragraph after the chart. The short text alternative for the chart indicates that a description follows.

Note: Refer to Understanding Text Alternatives for more information.

used in an unusual or restricted way

words used in such a way that requires users to know exactly which definition to apply in order to understand the content correctly

Example: The term "gig" means something different if it occurs in a discussion of music concerts than it does in article about computer hard drive space, but the appropriate definition can be determined from context. By contrast, the word "text" is used in a very specific way in WCAG 2.0, so a definition is supplied in the glossary.

user agent

any software that retrieves and presents Web content for users

Example: Web browsers, media players, plug-ins, and other programs — including <u>assistive technologies</u> — that help in retrieving, rendering, and interacting with Web content.

user-controllable

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 187 of 231 USCA Case # https://www.specialistics.com/page/specialistics/page/specialisti

Example: Name and address fields for a user's account.

user interface component

a part of the content that is perceived by users as a single control for a distinct function

Note 1: Multiple user interface components may be implemented as a single programmatic element. Components here is not tied to programming techniques, but rather to what the user perceives as separate controls.

Note 2: User interface components include form elements and links as well as components generated by scripts.

Example: An applet has a "control" that can be used to move through content by line or page or random access. Since each of these would need to have a name and be settable independently, they would each be a "user interface component."

video

the technology of moving or sequenced pictures or images

Note: Video can be made up of animated or photographic images, or both.

video-only

a time-based presentation that contains only video (no audio and no interaction)

viewport

object in which the user agent presents content

Note 1: The <u>user agent</u> presents content through one or more viewports. Viewports include windows, frames, loudspeakers, and virtual magnifying glasses. A viewport may contain another viewport (e.g., nested frames). Interface components created by the user agent such as prompts, menus, and alerts are not viewports.

Note 2: This definition is based on User Agent Accessibility Guidelines 1.0 Glossary.

visually customized

the font, size, color, and background can be set

Web page

a non-embedded resource obtained from a single URI using HTTP plus any other resources that are used in the rendering or intended to be rendered together with it by a user agent

Note 1: Although any "other resources" would be rendered together with the primary resource, they would not necessarily be rendered simultaneously with each other.

Note 2: For the purposes of conformance with these guidelines, a resource must be "non-embedded" within the scope of conformance to be considered a Web page.

Example 1: A Web resource including all embedded images and media.

Example 2: A Web mail program built using Asynchronous JavaScript and XML (AJAX). The program lives entirely at http://example.com/mail, but includes an inbox, a contacts area and a calendar. Links or buttons are provided that cause the inbox, contacts, or calendar to display, but do not change the URI of the page as a whole.

Example 3: A customizable portal site, where users can choose content to display from a set of different content modules.

Example 4: When you enter "http://shopping.example.com/" in your browser, you enter a movie-like interactive shopping environment where you visually move around in a store dragging products off of the shelves around you and into a visual shopping cart in front of you. Clicking on a product causes it to be demonstrated with a specification sheet floating alongside. This might be a single-page Web site or just one page within a Web site.

Appendix B: Acknowledgments

This section is informative.

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Additional information about participation in the **Well 1663**nt Accessibility Guidelines Working Group (WCAG WG) can be found on the Working Group home page.

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- Bruce Bailey (U.S. Access Board)
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28 of 28

Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 189 of 231 USUNESCOSE #17-7039 Document #1715850 Filed: 01/31/2018 Page 443 of 537

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WCAG10

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Case 1:13-cv-01215-TSC Document 122-6 Filed 12/22/15 Page 190 of 231 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 444 of 537

Exhibit D

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EXHIBIT 97

No.	Edition	Title	Superseded by:
ASTM A106 / A106 M	2004ь	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service	A106/A106M-15
ASTM A184	1979	Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement	A184/A184M - 06(2011)
ASTM A185	1979	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement	ASTM A185/A185M-07
ASTM A203 / A203M	1997	Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel	A203/A203M - 12
ASTM A242	1979	Standard Specification for High-Strength Low-Alloy Structural Steel	A242/A242M - 13
ASTM A285	1978	Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate- Tensile Strength	A285/A285M - 12
ASTM A307	1978e	Standard Specification for Carbon Steel Externally Threaded Standard Fasteners	A307 - 14
ASTM A325	1979	Standard Specification for High-Strength Bolts for Structural Steel Joints	A325 - 14
ASTM A333 / A333M	1994	Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service	A333/A333M - 13

No.	Edition	Title	Superseded by:
ASTM A36	1977ae	Standard Specification for Structural Steel	A36/A36M - 14
ASTM A36 / A36M	1997ae1	Standard Specification for Carbon Structural Steel	A36/A36M - 14
ASTM A369 / A369M	1992	Standard Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High- Temperature Service	A369/A369M - 11
ASTM A370	1977e 2	Standard Methods and Definitions for Mechanical Testing of Steel Products	A370 - 15
ASTM A441	1979	Standard Specification for High-Strength Low-Alloy Structural Manganese Vanadium Steel	ASTM D441 - 07(2012)
ASTM A449	1978a	Standard Specification for Quenched and Tempered Steel Bolts and Studs	A449 - 14
ASTM A475	1978 (1984) e 1	Standard Specification for Zinc-Coated Steel Wire Strand	A475 - 03(2014)
ASTM A490	1979	Standard Specification for Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints	A490 - 14a
ASTM A496	1978	Standard Specification for Deformed Steel Wire for Concrete Reinforcement	ASTM A496/A496M-07

No.	Edition	Title	Superseded by:
ASTM A497	1979	Standard Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement	ASTM A497/A497M-07
ASTM A500	1978	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes	A500/A500M - 13
ASTM A501	1976	Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing	A501/A501M - 14
ASTM A502	1976	Standard Specification for Steel Structural Rivets	A502 - 03(2015)
ASTM A514	1977	Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding	A514/A514M - 14
ASTM A516 / A516M	1990 (1996) e1	Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower- Temperature Service	A516/A516M - 10(2015)
ASTM A520	1972 (1985)	Standard Specification for Supplementary Requirements for Seamless and Electric- Resistance-Welded Carbon Steel Tubular Products for High-Temperature Service Conforming to ISO Recommendations For Boiler Construction	Withdrawn Standard: ASTM A520-97 Developed by Subcommittee: A01.09 WITHDRAWN, NO REPLACEMENT

No.	Edition	Title	Superseded by:
ASTM A522 / A522M	1995b	Standard Specification forForged or Rolled 8 and 9 % Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low- Temperature Service	A522/A522M - 14
ASTM A529	1975	Standard Specification for Structural Steel with 42,000PSI (290 Mpa) Minimum Yield Point (1/2 in. (12.7 mm) Maximum Thickness	A529/A529M - 14
ASTM A539	1990a	Standard Specification for Electric- Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines	Withdrawn Standard: ASTM A539-99 Developed by Subcommittee: A01.09 D28WITHDRAWN, NO REPLACEMENT
ASTM A570	1979	Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality	Withdrawn Standard: ASTM A570/A570M-98 Developed by Subcommittee: A01.19 WITHDRAWN, REPLACED BY A1011/A1011M
ASTM A572	1979	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality	A572/A572M - 15
ASTM A588	1979a	Standard Specification for High-Strength Low-Alloy Structural Steel with 50, 000 psi Minimum Yield Point to 4 in. Thick	A588/A588M - 15

No.	Edition	Title	Superseded by:
ASTM A611	1972 (1979)	Standard Specification for Steel, Cold-Rolled Sheet, Carbon, Structural	Withdrawn Standard: ASTM A611-97 Developed by Subcommittee: A01.19 WITHDRAWN, REPLACED BY A1008/A1008M
ASTM A615	1979	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement	A615/A615M - 15ae1
ASTM A616	1979	Standard Specification for Rail-Steel Deformed and Plain Bars for Concrete Reinforcement	Withdrawn Standard: ASTM A616/A616M-96a Developed by Subcommittee: A01.05 WITHDRAWN, REPLACED BY A996/A996M
ASTM A617	1979	Standard Specification for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement	Withdrawn Standard: ASTM A617/A617M-96a Developed by Subcommittee: A01.05 WITHDRAWN, REPLACED BY A996/A996M
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ASTM A633	1979a	Standard Specification for Normalized High-Strength Low Alloy Structural Steel	A633/A633M - 13

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ASTM A82	1979	Standard Specification for Cold-Drawn Steel Wire for Concrete Reinforcement	Withdrawn Standard: ASTM A82/A82M-07 Developed by Subcommittee: A01.05WITHDRAWN, REPLACED BY A1064/A1064M
ASTM B111	1995	Standard Specification for Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock	B111/B111M - 11
ASTM B122 / B 122M	1995	Standard Specification for Copper-Nickel- Tin Alloy, Copper-Nickel-Zinc Alloy (Nickel Silver), and Copper-Nickel Alloy Plate, Sheet, Strip and Rolled Bar	B122/B122M - 11
ASTM B124	1996	Standard Specification for Copper and Copper-Alloy Forging Rod, Bar, and Shapes	B124/B124M - 15
ASTM B152	1997a	Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar	B152/B152M - 13
ASTM B16	1992	Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines	ASTM B16 / B16M - 10(2015)
ASTM B193	1987	Standard Test Method for Resistivity of Electrical Conductor Materials	B193 - 02(2014)

No.	Edition	Title	Superseded by:
ASTM B209	1996	Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate	B209 - 14
ASTM B21	1996	Standard Specification for Naval Brass Rod, Bar, and Shapes	ASTM B21 / B21M - 14
ASTM B21	1983b	Standard Specification for Naval Brass Rod, Bar, and Shapes	ASTM B21 / B21M - 14
ASTM B224	1980e 1	Standard Classification of Coppers	B224 - 15
ASTM B280	1997	Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	B280 - 13
ASTM B283	1996	Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)	B283/B283M - 14a
ASTM B315	1993	Standard Specification for Seamless Copper Alloy Pipe and Tube	B315 - 12
ASTM B42	1996	Standard Specification for Seamless Copper Pipe, Standard Sizes	B42 - 15a
ASTM B557	1984	Standard Methods of Tension Testing Wrought and Cast Aluminum and Magnesium-Alloy Products	B557 - 15
ASTM B580	1979	Standard Specification for Anodized Oxide Coatings on Aluminum	B580 - 79(2014)

No.	Edition	Title	Superseded by:
ASTM B68	1995	Standard Specification for Seamless Copper Tube, Bright Annealed	B68/B68M - 11
ASTM B694	1986	Standard Specification for Copper, Copper Alloy, and Copper-Clad Stainless Steel Sheet and Strip for Electrical Cable Shielding	B694 - 13
ASTM B75	1997	Standard Specification for Seamless Copper Tube	B75/B75M - 11
ASTM B85	1984	Standard Specification for Aluminum-Alloy Die Castings	B85/B85M - 14
ASTM B858	1995	Standard Test Method for Determination of Susceptibility to Stress Corrosion Cracking in Copper Alloys Using an Ammonia Vapor Test	B858 - 06(2012)
ASTM B88	1996	Standard Specification for Seamless Copper Water Tube	B88 - 14
ASTM B96	1993	Standard Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels	B96/B96M - 11
ASTM C150	1999a	Standard Specification for Portland Cement	C150/C150M - 15

No.	Edition	Title	Superseded by:
ASTM C177	1997	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus	C177 - 13
ASTM C236	1989 (1993) e 1	Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box	Withdrawn Standard: ASTM C236-89(1993)e1 Developed by Subcommittee: C16.30 WITHDRAWN, REPLACED BY C1363
ASTM C330	1999	Standard Specification for Lightweight Aggregates for Structural Concrete	C330/C330M - 14
ASTM C5	1979 (1997)	Standard Specification for Quicklime for Structural Purposes	C5 - 10
ASTM C509	1984	Standard Specification for Cellular Elastomeric Preformed Gasket and Sealing Material	C509 - 06(2011)
ASTM C516	1980 (1996) e 1	Standard Specification for Vermiculite Loose Fill Thermal Insulation	C516 - 08(2013)e1
ASTM C518	1991	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	C518 - 15

No.	Edition	Title	Superseded by:
ASTM C549	1981 (1995) e 1	Standard Specification for Perlite Loose Fill Insulation	C549 - 06(2012)
ASTM C564	1970 (1982)	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	C564 - 14
ASTM C720	1989 (1994) e 1	Standard Specification for Spray Applied Fibrous Insulation for Elevated Temperature	Withdrawn Standard: ASTM C720-89(1994)e1 Developed by Subcommittee: C16.23 WITHDRAWN, NO REPLACEMENT
ASTM D1072	1990 (1994) e 1	Standard Test Method for Total Sulfur in Fuel Gases	D1072 - 06(2012)
ASTM D1193	1977 (1983)	Standard Specification for Reagent Water	D1193 - 06(2011)
ASTM D1217	1993 (1998)	Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer	D1217 - 12
ASTM D1246	1995 (1999)	Standard Test Method for Bromide Ion in Water	D1246 - 10
ASTM D1253	1986 (1996)	Standard Test Method for Residual Chlorine in Water	D1253 - 14
ASTM D1266	1998	Standard Test Method for Sulfur in Petroleum Products (Lamp Method)	D1266 - 13

No.	Edition	Title	Superseded by:
ASTM D129	1995	Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)	D129 - 13
ASTM D1298	1999	Standard Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method	D1298 - 12b
ASTM D1335	1967 (1972)	Standard Method of Test for Tuft Bind of Pile Floor Coverings	D1335 - 12
ASTM D1412	1993 (1997)	Standard Test Method for Equilibrium Moisture of Coal at 96 to 97 Percent Relative Humidity and 30 Degrees Celsius	D1412/D1412M - 15
ASTM D1415	1988 (1994)	Standard Practice for Rubber Property- International Hardness	D1415 - 06(2012)
ASTM D1480	1993 (1997)	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer	D1480 - 12
ASTM D1481	1993 (1997)	Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary Pycnometer	D1481 - 12
ASTM D1518	1985 (1998) e1	Standard Test Method for Thermal Transmittance of Textile Materials	D1518 - 14

No.	Edition	Title	Superseded by:
ASTM D1535	1989	Standard Test Method for Specifying Color by the Munsell System	D1535 - 14
ASTM D1552	1995	Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method)	D1552 - 15
ASTM D1687	1992 (1996)	Standard Test Methods for Chromium in Water	D1687 - 12
ASTM D1688	1995	Standard Test Methods for Copper in Water	D1688 - 12
ASTM D1785	1986	Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120	D1785 - 15
ASTM D1835	1997	Standard Specification for Liquefied Petroleum (LP) Gases	D1835 - 13
ASTM D1890	1996	Standard Test Method for Beta Particle Radioactivity of Water	D1890 - 15
ASTM D1943	1996	Standard Test Method for Alpha Particle Radioactivity of Water	D1943 - 05(2012)
ASTM D1945	1996	Standard Test Method for Analysis of Natural Gas By Gas Chromatography	D1945 - 14
ASTM D1946	1990 (1994) e1	Standard Practice for Analysis of Reformed Gas by Gas Chromatography	D1946 - 90(2011)

No.	Edition	Title	Superseded by:
ASTM D2013	1986 (1994)	Standard Method of Preparing Coal Samples for Analysis	D2013/D2013M - 12
ASTM D2015	1996	Standard Test Method for Gross Calorific Value of Coal and Coke by the Adiabatic Bomb Calorimeter	Withdrawn Standard: ASTM D2015-00 Developed by Subcommittee: D05.21 WITHDRAWN, NO REPLACEMENT
ASTM D2036	1998	Standard Test Method for Cyanides in Water	D2036 - 09(2015)
ASTM D2163	1991 (1996)	Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography	D2163 - 14e1
ASTM D2216	1998	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass	D2216 - 10
ASTM D2234	1998	Standard Practice for Collection of a Gross Sample of Coal	D2234/D2234M - 10
ASTM D2247	1968 (1973)	Standard Method for Testing Coated Metal Specimans at 100 Percent Relative Humidity	D2247 - 11
ASTM D2460	1997	Standard Test Method for Alpha-Particle- Emitting Isotopes of Radium in Water	D2460 - 07(2013)

No.	Edition	Title	Superseded by:
ASTM D2502	1992 (1996)	Standard Test Method for Estimation of Molecular Weight (Relative Molecular Mass) of Petroleum Oils from Viscosity Measurements	D2502 - 14
ASTM D2503	1992 (1997)	Standard Test Method for Relative Molecular Mass (Molecular Weight) of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure	D2503 - 92(2012)
ASTM D2505	1988 (1998)	Standard Test Method for Ethylene, Other Hydrocarbons, and Carbon Dioxide in High-Purity Ethylene by Gas Chromatography	D2505 - 88(2015)
ASTM D257	1991	Standard Test Method for DC Resistance of Conductance of Insulating Materials	D257 - 14
ASTM D2597	1994 (1999)	Standard Test Method for Analysis of Demethanized Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography	D2597 - 10
ASTM D2622	1998	Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry	D2622 - 10
ASTM D2724	1987 (1995)	Standard Test Methods for Bonded, Fused, and Laminated Apparel Fabrics	D2724 - 07(2015)

No.	Edition	Title	Superseded by:
ASTM D2777	1998	Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D-19 on Water	D2777 - 13
ASTM D287	1992 (1995)	Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)	D287 - 12b
ASTM D2879	1997	Standard Test Method for Vapor Pressure- Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope	D2879 - 10
ASTM D2908	1974	Standard Recommended Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography	D2908 - 91(2011)
ASTM D2986	1995a (1999)	Standard Practice for Evaluation of Air, Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test	Withdrawn Standard: ASTM D2986-95a(1999) Developed by Subcommittee: D22.01 WITHDRAWN, NO REPLACEMENT
ASTM D3120	1996	Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry	D3120 - 08(2014)

No.	Edition	Title	Superseded by:
ASTM D3173	1987 (1996)	Standard Test Method for Moisture in the Analysis Sample of Coal and Coke	D3173 - 11
ASTM D3176	1989 (1997)	Standard Practice for Ultimate Analysis of Coal and Coke	D3176 - 15
ASTM D3177	1989 (1997)	Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke	Withdrawn Standard: ASTM D3177-02(2007) Developed by Subcommittee: D05.21WITHDRAWN, REPLACED BY D4239
ASTM D3178	1989 (1997)	Standard Test Methods for Carbon and Hydrogen in the Analysis Sample of Coal and Coke	Withdrawn Standard: ASTM D3178-89(2002) Developed by Subcommittee: D05.21 WITHDRAWN, REPLACED BY D5373
ASTM D323	1958 (1968)	Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)	D323 - 15a
ASTM D3236	1988 (1999)	Standard Test Method for Apparent Viscosity of Hot Melt Adhesives and Coating Materials	D3236 - 15
ASTM D3246	1996	Standard Test Method for Sulfur in Petroleum Gas by Oxidative Microcoulometry	D3246 - 15

No.	Edition	Title	Superseded by:
ASTM D3286	1996	Standard Test Method for Gross Calorific Value of Coal and Coke by the Isoperibol Bomb Calorimeter	Withdrawn Standard: ASTM D3286-96 Developed by Subcommittee: D05.21WITHDRAWN, REPLACED BY D5865
ASTM D3371	1995	Standard Test Method for Nitriles in Aqueous Solution by Gas-Liquid Chromatography	Withdrawn Standard: ASTM D3371-95 Developed by Subcommittee: D19.06 WITHDRAWN, NO REPLACEMENT
ASTM D3454	1997	Standard Test Method for Radium-226 in Water	D3454 - 11
ASTM D3588	1998	Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels	D3588 - 98(2011)
ASTM D3697	1992 (1996)	Standard Test Method for Antimony in Water	D3697 - 12
ASTM D388	1998a	Standard Classification of Coals by Rank	D388 - 15
ASTM D396	1998	Standard Specification for Fuel Oils	D396 - 15c
ASTM D4057	1995e 1	Standard Practice for Manual Sampling of Petroleum and Petroleum Products	D4057 - 12

No.	Edition	Title	Superseded by:
ASTM D4084	1994	Standard Test Method for Analysis of Hydrogen Sulfide in Gaseous Fuels (Lead Acetate Reaction Rate Method)	D4084 - 07(2012)
ASTM D413	1982 (1993) e 1	Standard Test Method for Rubber Property- -Adhesion to Flexible Substrate	D413 - 98(2013)
ASTM D4177	1995	Standard Practice for Automatic Sampling of Petroleum and Petroleum Products	D4177 - 15a
ASTM D4239	1997e 1	Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods	D4239 - 14e2
ASTM D4268	1993	Standard Test Method for Testing Fiber Ropes	Withdrawn Standard: ASTM D4268-93 Developed by Subcommittee: D13.16 WITHDRAWN, NO REPLACEMENT
ASTM D4294	1998	Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry	D4294 - 10
ASTM D4329	1999	Standard Practice for Fluorescent UV Exposure of Plastics	D4329 - 13

No.	Edition	Title	Superseded by:
ASTM E283	1991 (1999)	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen	E283 - 04(2012)
ASTM E185	1982	Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels	E185 - 15e1
ASTM D4891	1989 (1994) E 1	Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion	D4891 - 13
ASTM D5489	1996a	Standard Guide for Care Symbols for Care Instructions Textile Products	D5489 - 14
ASTM E408	1971	Standard Methods of Test for Total Normal Emittance of Surfaces Using Inspection- Meter Techniques	E408 - 13
ASTM D611	1982 (1998)	Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents	D611 - 12
ASTM D5373	1993 (1997)	Standard Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal and Coke	D5373 - 14e1

No.	Edition	Title	Superseded by:
ASTM E606	1980	Standard Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing	E606 / E606M - 12
ASTM E695	1979 (1997) e 1	Standard Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading	E695 - 03(2015)e1
ASTM D814	1995	Standard Test Method for Rubber Property- -Vapor Transmission of Volatile Liquids	D814 - 95(2014)
ASTM F478	1992 (1999)	Standard Specification for In-Service Care of Insulating Line Hose and Covers	F478 - 14a
ASTM D6216	1998	Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications	D6216 - 12
ASTM D6228	1998	Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection	D6228 - 10
ASTM E72	1980	Standard Methods of Conducting Strength Tests of Panels for Building Construction	E72 - 15
ASTM D6503	1999	Standard Test Method for Enterococci in Water Using Enterolert	D6503 - 14
ASTM F1122	1987 (1998)	Standard Specification for Quick Disconnect Couplings	F1122 - 04(2015)e1

No.	Edition	Title	Superseded by:
ASTM F1155	1998	Standard Practice for Selection and Application of Piping System Materials	F1155 - 10(2015)
ASTM F1273	1991 (1996) e 1	Standard Specification for Tank Vent Flame Arresters	F1273 - 91(2013)
ASTM D975	1998b	Standard Specification for Diesel Fuel Oils	D975 - 15c
ASTM F631	1993	Standard Guide for Collecting Skimmer Performance Data in Controlled Environments	F631 - 15
ASTM F715	1995	Standard Test Methods for Coated Fabrics Used for Oil Spill Control and Storage	F715 - 07(2012)
ASTM F722	1982 (1988)	Standard Specification for Welded Joints for Shipboard Piping Systems	F722 - 82(2014)
ASTM D4986	1998	Standard Test Method for Horizontal Burning Characteristics of Cellular Polymeric Materials	D4986 - 10
ASTM D5673	1996	Standard Test Method for Elements in Water by Inductively Coupled Plasma- Mass Spectrometry	D5673 - 15
ASTM E154	1968 (1979) e 1	Standard Methods of Testing Materials for Use as Vapor Barriers Under Concrete Slabs and as Ground Cover in Crawl Spaces	E154/E154M - 08a(2013)e1

No.	Edition	Title	Superseded by:
ASTM D5865	1998a	Standard Test Method for Gross Calorific Value of Coal and Coke	D5865 - 13
ASTM D665	1998e 1	Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water	D665 - 14e1
ASTM D86	2007	Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure	D86 - 15
ASTM D5257	1997	Standard Test Method for Dissolved Hexavalent Chromium in Water by Ion Chromatography	D5257 - 11
ASTM E1337	1990 (1996)	Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using a Standard Reference Test Tire	E1337 - 90(2012)
ASTM E23	1982	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials	E23 - 12c
ASTM D512	1989 (1999)	Standard Test Methods for Chloride Ion In Water	D512 - 12
ASTM D975	2007	Standard Specification for Diesel Fuel Oils	D975 - 15c
ASTM E29	1993a	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	E29 - 13

No.	Edition	Title	Superseded by:
ASTM E29	1990	Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications	E29 - 13
ASTM D976	1991 (1995) e 1	Standard Test Methods for Calculated Cetane Index of Distillate Fuels	D976 - 06(2011)
ASTM E424	1971	Standard Methods of Test for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials	E424 - 71(2015)
ASTM E11	1995	Standard Specification for Wire Cloth and Sieves for Testing Purposes	E11 - 15
ASTM E1625	1994	Standard Test Method for Determining Biodegradability of Organic Chemicals in Semi- Continuous Activated Sludge (SCAS)	Withdrawn Standard: ASTM E1625-94(2008) Developed by Subcommittee: E47.04 WITHDRAWN, NO REPLACEMENT
ASTM E168	1988	Standard Practices for General Techniques of Infrared Quantitative Analysis	Withdrawn Standard: ASTM E168-06 Developed by Subcommittee: E13.03 WITHDRAWN, NO REPLACEMENT

No.	Edition	Title	Superseded by:
ASTM D4420	1994	Standard Test Method for Determination of Aromatics in Finished Gasoline by Gas Chromatography	Withdrawn Standard: ASTM D4420-94(1999)e1 Developed by Subcommittee: D02.04.0L WITHDRAWN, REPLACED BY D5580
ASTM D4809	1995	Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)	D4809 - 13
ASTM E773	1997	Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units	Withdrawn Standard: ASTM E773-01 Developed by Subcommittee: E06.22WITHDRAWN, NO REPLACEMENT
ASTM E774	1997	Standard Specifications for the Classification of the Durability of Sealed Insulating Glass Units	Withdrawn Standard: ASTM E774-97 Developed by Subcommittee: E06.22 WITHDRAWN, NO REPLACEMENT
ASTM E169	1987	Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis	E169 - 04(2014)
ASTM D6420	1999	Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry	D6420 - 99(2010)

No.	Edition	Title	Superseded by:
ASTM E145	1994e 1	Standard Specification for Gravity- Convection and Forced- Ventilation Ovens	E145 - 94(2011)
ASTM E96	1995	Standard Test Methods for Water Vapor Transmission of Materials	E96/E96M - 15
ASTM E260	1996	Standard Practice for Packed Column Gas Chromatography	E260 - 96(2011)
ASTM F1006	1986 (1997)	Standard Specification for Entrainment Separators for Use in Marine Piping Applications	F1006 - 86(2014)e1
ASTM F1007	1986 (1996) e 1	Standard Specification for Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application	F1007 - 86(2014)
ASTM E711	1987 (1992)	Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter	Withdrawn Standard: ASTM E711-87(2004) Developed by Subcommittee: D34.03 WITHDRAWN, NO REPLACEMENT
ASTM F1020	1986 (1996) e 1	Standard Specification for Line-Blind Valves for Marine Applications	F1020 - 86(2011)
ASTM F1120	1987 (1998)	Standard Specification for Circular Metallic Bellows Type Expansion Joints for Piping Applications	F1120 - 87(2015)

No.	Edition	Title	Superseded by:
ASTM E776	1987 (1992)	Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel	E776 - 87(2009)
ASTM E1719	1997	Standard Test Method for Vapor Pressure of Liquids by Ebulliometry	E1719 - 12
ASTM F1123	1987 (1998)	Standard Specification for Non-Metallic Expansion Joints	F1123 - 87(2015)
ASTM F1139	1988 (1998)	Standard Specification for Steam Traps and Drains	F1139 - 88(2015)
ASTM E681	1985	Standard Test Method for Concentration Limits of Flammability of Chemicals	E681 - 09(2015)
ASTM F1172	1988 (1998)	Standard Specification for Fuel Oil Meters of the Volumetric Positive Displacement Type	F1172 - 88(2015)e1
ASTM F1173	1995	Standard Specification for Thermosetting Resin Fiberglass Pipe and Fittings to be Used for Marine Applications	F1173 - 01(2012)
ASTM E775	1987 (1992)	Standard Test Methods for Total Sulfur in the Analysis Sample of Refuse-Derived Fuel	E775 - 15

No.	Edition	Title	Superseded by:
ASTM E885	1988	Standard Test Methods for Analyses of Metals in Refuse-Derived Fuel by Atomic Absorption Spectroscopy	Withdrawn Standard: ASTM E885-88(2004) Developed by Subcommittee: D34.03WITHDRAWN, NO REPLACEMENT
ASTM F1003	1986 (1992)	Standard Specification for Searchlights on Motor Lifeboats	F1003 - 02(2012)e1
ASTM F1199	1988 (1998)	Standard Specification for Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and 150 Degrees F Maximum)	F1199 - 88(2015)
ASTM F1200	1988 (1998)	Standard Specification for Fabricated (Welded) Pipe Line Strainers (Above 150 psig and 150°F)	F1200 - 88(2010)
ASTM F1201	1988 (1998)	Standard Specification for Fluid Conditioner Fittings in Piping Applications Above Zero Degrees F	F1201 - 88(2010)
ASTM F1014	1992	Standard Specification for Flashlights on Vessels	F1014 - 02(2012)e1
ASTM F1121	1987 (1998)	Standard Specification for International Shore Connections for Marine Fire Applications	F1121 - 87(2015)

No.	Edition	Title	Superseded by:
ASTM F1193	2006	Standard Practice for Quality, Manufacture, and Construction of Amusement Rides and Devices	F1193 - 14
ASTM F1196	1994	Standard Specification for Sliding Watertight Door Assemblies	F1196 - 00(2013)
ASTM F1471	1993	Standard Test Method for Air Cleaning Performance of a High-Efficiency Particulate Air-Filter System	F1471 - 09
ASTM F1197	1989 (1994) e 1	Standard Specification for Sliding Watertight Door Control Systems	F1197 - 00(2012)
ASTM F1548	1994	Standard Specification for the Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	F1548 - 01(2012)
ASTM F1271	1990 (1995) e 1	Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment	F1271 - 90(2012)
ASTM F1321	1992	Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine Light Ship Displacement and Centers of Gravity of a Vessel	F1321 - 14

No.	Edition	Title	Superseded by:
ASTM F1323	1998	Standard Specification for Shipboard Incinerators	F1323 - 14
ASTM F462	1979 (1999)	Standard Consumer Safety Specification for Slip-Resistant Bathing Facilities	F462 - 79(2007)
ASTM F1546 / F 1546M	1996	Standard Specification for Fire Hose Nozzles	F1546 - 96(2012)e1
ASTM F1950	1999	Standard Specification for Physical Information to be Transferred With Used Amusement Rides and Devices	Withdrawn Standard: ASTM F1950-99 Developed by Subcommittee: F24.20 WITHDRAWN, NO REPLACEMENT
ASTM F1951	1999	Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment	F1951 - 14
ASTM F682	1982a (1988)	Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings	F682 - 82a(2014)
ASTM F1957	1999	Standard Test Method for Composite Foam Hardness Durometer Hardness	F1957 - 99(2011)
ASTM F631	1980 (1985)	Standard Method for Testing Full Scale Advancing Spill Removal Devices	F631 - 15
ASTM F715	1981 (1986)	Standard Methods of Testing Spill Control Barrier Membrane Materials	F715 - 07(2012)

No.	Edition	Title	Superseded by:
ASTM F747	1997	Standard Terminology Relating to Amusement Rides and Devices	F747 - 15
ASTM F808	1983 (1988) e 1	Standard Guide for Collecting Skimmer Performance Data in Uncontrolled Environments	Withdrawn Standard: ASTM F808-83(1988) Developed by Subcommittee: F20.12 WITHDRAWN, NO REPLACEMENT
ASTM G151	1997	Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources	G151 - 10
ASTM G154	2000a	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials	G154 - 12a
ASTM G21	1990	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi	G21 - 15

EXHIBIT 98

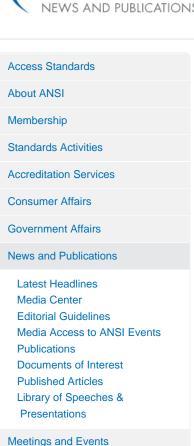
No.	Edition	Title	Superseded by:
NFPA 1	2003	Uniform Fire Code	2015
NFPA 1	2006	Uniform Fire Code	2015
NFPA 11	2005	Standard for Low Medium and High Expansion Foam	2016
NFPA 12	2005	Standard on Carbon Dioxide Extinguishing Systems	2015
NFPA 10	2002	Standard for Portable Fire Extinguishers (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2013
NFPA 13	2002	Installation of Sprinkler Systems (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2016
NFPA 25	2002	Inspection, Testing and Maintenance of Water-Based Fire Protection Systems (Title of work on certificate of registration is "National Fire Codes Vol. 1-12 and Master Index")	2014
NFPA 30	2003	Flammable and Combustible Liquids Code	2015
NFPA 54	2006	National Fuel Gas Code	2015

No.	Edition	Title	Superseded by:
NFPA 58	2001	Liquified Petroleum Gas Code (Title of work on certificate of registration is "National Fire Codes Vol 3")	2014
NFPA 58	2004	Liquefied Petroleum Gas Code	2014
NFPA 59	2004	Utility LP Gas Plant Code	2015
NFPA 70	1999	National Electrical Code	2014
NFPA 70	2005	National Electrical Code	2014
NFPA 70	2008	National Electrical Code	2014
NFPA 70	2011	National Electrical Code	2014
NFPA 70	2014	National Electrical Code	NA
NFPA 72	2002	National Fire Alarm Code	2016
NFPA 99	2005	Health Care Facilities Code	2015
NFPA 101	2000	Life Safety Code	2015
NFPA 101	2003	Life Safety Code	2015
NFPA 101	2006	Life Safety Code	2015
NFPA 704	2007	Standard System for the Identification of the Hazards of Materials for Emergency Response	2012

EXHIBIT 99

No.	Edition	Title	Superseded by:
ANSI/ASHRAE/IES 90.1	2010	ANSI/ASHRAE/IESNA Standard 90 1-2010, Energy Standard for Buildings Except for Low- Rise Residential Buildings (I-P Edition)	2013
ANSI/ASHRAE/IESNA 90.1	2007	ANSI/ASHRAE/IESNA Standard 90 1-2007, Energy Standard for Buildings Except for Low- Rise Residential Buildings (I-P Edition)	2013
ANSI/ASHRAE/IESNA 90.1	2004	ANSI/ASHRAE/IESNA Standard 90 1-2004, Energy Standard for Buildings Except for Low- Rise Residential Buildings (I-P Edition)	2013
ASHRAE Handbook	1993	1993 ASHRAE Handbook: Fundamentals (I-P Edition)	2013

EXHIBIT 104



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Capitol Hill Event to Feature Policy and Business Leader Insights on Voluntary Standards and Conformance

12/03/2015

The American National Standards Institute (ANSI) has teamed with the National Association of Manufacturers (NAM) to cohost an exclusive Shopfloor Series event on Capitol Hill entitled "What Do Airplanes, Robots, Toys, Flat Screen TVs Amusement Parks & 3D Printing Have in Common?" The event—on December 4, 2015, from 12:00-1:30 p.m. EST—will feature discussions between policy and business leaders who will highlight the importance of government participation in and the reliance on voluntary standards and conformance.



Underwriters Laboratories (UL) and the American Bar Association. Featured experts will include Jeff Weiss, senior advisor for standards and global regulatory policy at the U.S. Department of Commerce, as well as representatives from the Toy Industry Association (TIA), ANSI, ASTM International, the National Electrical Manufacturers Association (NEMA), and UL.

To view the event flyer click here. To learn more or to RSVP, contact Scott Cooper, ANSI vice president of government relations (scooper@ansi.org; 202.331.3610).



JA1726

Capitol Hill Event to Feature Policy and Business Leader Insights on Voluntary Standards and Conformance Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 27 of 117

About ANSI	Domestic Programs	Government Affairs	Join ANSI
ANSI Structure and Management	Public Review: Standards Action	IBR Portal	Standards Store
Organization Chart	International and Regional Programs	IBR Resources	Site Licenses
Staff Directory	Standards Portal	Consumer Affairs	Contact Us
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Online Document Library	ISO Programs	Media Center	FAQ
	Accreditation Programs	Meetings and Events	Terms and conditions
Registration Services	Standards Panels and Collaboratives	Awards	Use of the ANSI Logo
		Education and Training	Linking Policy
		Key Documents of Interest	Copyright

















EXHIBIT 106



ASTM INTERNATIONAL Helping our world work better

Public Policy & Corporate Outreach

Virtual Officers' Training Week September 2015

Presenter: Sarah Shoemaker

ASTM International

About ASTM International

- Non-governmental, not-for-profit organization
- Develops voluntary, consensus standards
- Provides certification programs
- Does not provide accreditation services

ASTM's objectives

- Promote public health and safety, and the overall quality of life
- Contribute to the reliability of materials, products, systems and services
- Facilitate national, regional, and international commerce





Role of Standards

Standards in the Public and Private Sector

- Impact global trade, innovation and competition
- Guide product design, development, market access
- Used by companies, research labs, government agencies

ASTM International Standards

- Voluntary consensus standards
- Regularly reviewed
- Meet World Trade Organization (WTO) principles for international standards





Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 50 of 117 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 490 of 537



ASTM INTERNATIONAL

Helping our world work better

Public Policy



ASTM in Washington, DC

Government Affairs

- Congress
- Federal government agencies

Stakeholder Outreach

- Companies
- Embassy officials based in Washington
- Industry associations
- International Non Governmental Organizations (NGOs)





U.S. Standards System

Voluntary and led by the private sector Requires cooperation among stakeholders

- Standards organizations
- Industry, consumers, and users
- Government representatives
- Academia

Meets stakeholders' needs

- Protect safety, health, and environment
- Improve industry competitiveness
- Facilitate global trade and market access





Support and Mandate for Government Page 493 of 537 Page 493 of 537 Page 53 of 117 Page 493 of 537 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 53 of 117 Page 493 of 537 Page 4

P.L. 104-113 National Technology Transfer and Advancement Act of 1995 (NTTAA)

-"...all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies,and shall, ...participate with such bodies in the development of technical standards."





U.S. Legal and Policy Framework

National Technology Transfer and Advancement Act of 1995 (NTTAA)

- Requires federal government agencies to use standards developed by voluntary consensus standards organization when possible
- Encourages federal government agencies to participate in standards development organizations

OMB Circular No. A-119

- Reinforces goals of National Technology Transfer and Advancement Act
- Discourages federal agencies from using government-unique standards





Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 55 of 117 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 495 of 537 Government Use of **Voluntary Consensus Standards**

Procurement and Contracts with the Federal Government

 Standards are furnished to ensure that materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders

Regulation that incorporates standard by reference

- An agency may adopt a voluntary standard (without changes) by incorporating the standard in a regulation by listing (or referencing) the standard by title.
- This approach eliminates the cost to the agency of creating a new standard

Regulation based on existing standard

- An agency reviews an existing standard and makes changes to match its goal or need.
- Agency conducts rulemaking process to solicit public opinion and stakeholder input





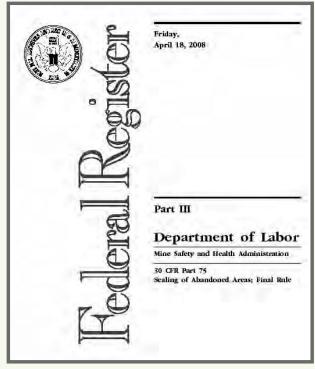
Federal Agencies & ASTM Standards

U.S. Code of Federal Regulations (CFR)

- 6,500 voluntary consensus standards incorporated by reference in federal law
- About 3,000 ASTM standards listed in CFR for regulations and procurement

U.S. Federal Register

- Public notification of standards adoptions
- Instructions for public comments







Top 10 Regulatory SDOs in US

Standards Developing Organization	Acronym	Number
American Society for Testing and Materials	ASTM	2566
U.S. Environmental Protection Agency	EPA	1471
American Public Health Association	АРНА	816
American Society of Mechanical Engineers	ASME	768
American National Standards Institute	ANSI	677
National Fire Protection Association	NFPA	589
International Maritime Organization	IMO	579
Society of Automotive Engineers	SAE	437
Reprographic Technologies		351
National Highway Traffic Safety Administration, U.S. Department of Transportation	DOT/NHTSA	344





Congress & ASTM Standards in Law

One Hundred Tenth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Thursday, the third day of January, two thousand and eight

An Act

To establish consumer product safety standards and other safety requirements for children's products and to reauthorize and modernize the Consumer Product Safety Commission.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

- (a) SHORT TITLE.—This Act may be cited as the "Consumer Product Safety Improvement Act of 2008".
- (b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:



Case 1:13-cv-01215-TSC Document 122-7 Filed 12/22/15 Page 59 of 117 Filed: 01/31/2018 Page 499 of 537 Regulations

Statutes and Law

- Consumer Product Safety Act (CPSA)
- Consumer Product Safety
 Improvement Act (CPSIA)
- Virginia Graeme Baker Pool and Spa Safety Act

Regulations and Mandatory Standards

- 15 CFR 1150 Marking of Toys, Look-Alike and Imitation Firearms
- 16 CFR 1500 Hazardous Substances
 Act Regulations





AS IMASSISTS In Transparency in Rulemaking



ASTM standards IBR are provided in a read only format to the general public in the reading room.



U.S. Government Membership in ASTM

Agency Name	Members
Department of Agriculture	40
Department of Commerce (incl. NIST)	165
Consumer Product Safety Commission	44
Department of Defense	257
Department of Energy	178
Environmental Protection Agency	79
Federal Aviation Administration	55
Department of Health and Human Services (incl. FDA)	120
Housing and Urban Development	3

Agency Name	Members
Department of Interior	3
Department of Justice	11
NASA	37
Nuclear Regulatory Commission	7
Occupational Safety & Health Administration	5
Department of Transportation	34
Department of Veterans Affairs	1





ASTM Initiatives with U.S. Government

Ensure reference to current standards

- Regular review of the Code of Federal Regulations and Congressional Record
- Coordinate technical committee communications to policymakers

Understand procurement and regulatory standards needs

- Review of Regulatory Plan and Agenda
- Encourage government liaison with and <u>participation in</u> committee activities





Proven Partnership





Sworn in as the 10th Chairman of the U.S. Consumer Product Safety Commission (CPSC) on July 30, 2014. President Barack Obama nominated Mr. Kaye on March 31, 2014, and he was confirmed by the U.S. Senate on July 28, 2014, to a term that expires in October 2020 Elliot F. Kaye



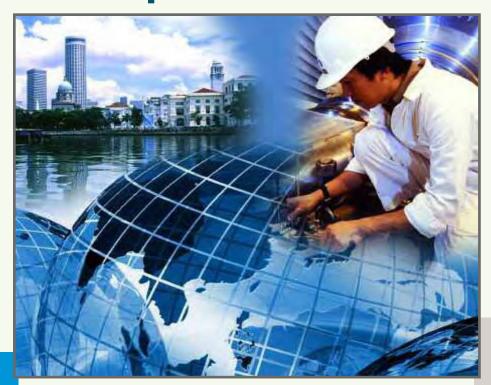




ASTM INTERNATIONAL

Helping our world work better

II. Corporate Outreach



ASTM Engages Decision-Makers

Raise awareness of standards and ASTM

- Standards facilitate trade and boost GDP
- No WTO list of international bodies

Identify opportunities for collaboration on issues of mutual interest

- Reduce internal company specifications

Seek industry feedback on activities and challenges

- ASTM supports industry needs to choose the best standard, regardless of the source

Ensure ASTM is meeting stakeholder needs

- -Satisfy regulations and laws
- Facilitate global trade





ASTM Standards Impact the Global Economy

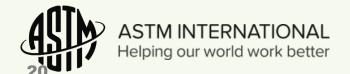
ASTM standards meet World Trade Organization (WTO) criteria for "international standards"

- No WTO list of international bodies
- WTO recognizes multiple approaches to international standardization

ASTM makes it easy to participate in international standards development

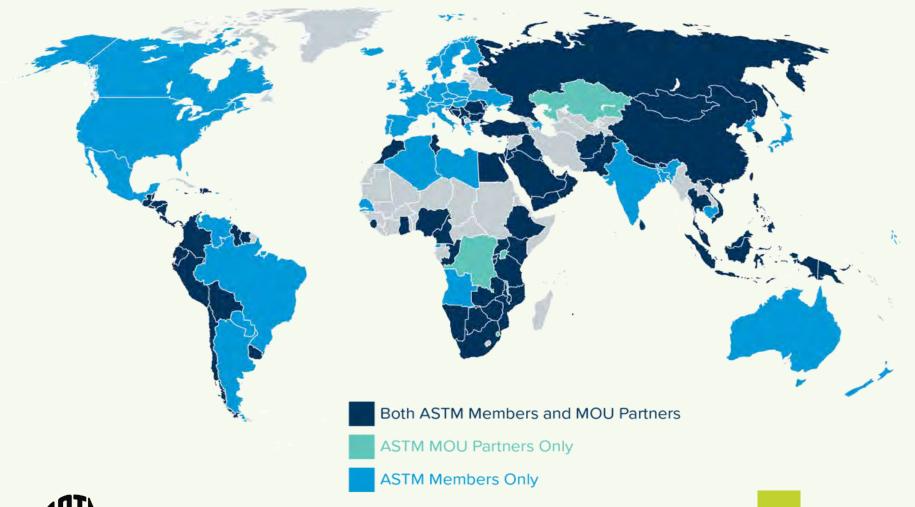
- Technology drives efficiency







ASTM's Global Reach





Virtual Officers' Training Week September 21-24, 2015

ASTM complies with WTO principles for international standards development

WTO / TBT Principles

Transparency **Openness** Impartiality and consensus Effectiveness and relevance Coherence Consideration of developing nations

ASTM Principles

Transparency **Openness** Impartiality and consensus Effectiveness and relevance Coherence Consideration of developing nations





Moving Forward

- ASTM seeks to enhance our level of cooperation and work with government and standards officials and industry to:
- Promote a global marketplace that is open, efficient, free of costly duplication, free of technical barriers, and free of national or regional limitations
- Produce high-quality and market relevant standards that advance R&D, product manufacturing, testing, quality assurance, marketing, and trade for both companies and SMEs
- Advance the ability of industries to choose the standards which best meet their needs
- Our global approach to standards development and use can help the world to work better through improved products, increased trade, and greater prosperity for the future.







ASTM INTERNATIONAL

Helping our world work better

III. Questions and Discussion

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EXHIBIT 123



Errata

NFPA 70[®]

National Electrical Code®

2011 Edition

Reference: Various **Errata No.:** 70-11-1

The National Electrical Code Correlating Committee notes the following errors in the 2011 edition of NFPA 70, *National Electrical Code*.

How to Use this Errata Sheet

This is a list of errata to the first printing of the 2011 *NEC*®. A first printing is indicated by the numeral 1 as the last digit in the line of number appearing at the bottom of the first page.

1. Page 70-36	110.14(C)(1): Revise 310.15(B)(6) to 310.15(B)(7)
2. Page 70-78	Figure 230.1: Revise "Source" to "Serving Utility" and 230.49 to 230.32
3. Page 70-86	230.90 Exception No. 5: Revise 310.15(B)(6) to 310.15(B)(7)
4. Page 70-102	Table 250.3: Revise 300.50(B) to 300.50(C)
5. Page 70-116	250.68(C)(2)(b): Revise to read: "By bonding the structural metal frame to one or more of the grounding electrodes, as specified in 250.52(A)(5) or (A)(7) that comply with 250.53(A)(2)."
6. Page 70-129	250.180: Revise 250.190 to 250.191
7. Page 70-139	300.5 (C) Exception No. 2: Revise 330.10(11) to 330.10(A)(11)
8. Page 70-148	310.10(E) Exception No. 2 (d): Revise Table 310.13(D) to Table 310.104(D)
9. Page 70-148	310.10(F): Remove deletion bullet and add second paragraph to read: "Cables rated above 2000 volts shall be shielded."
10. Page 70-154	Table 310.15(B)(16): Add double asterisk to 18 AWG and 16 AWG copper
11. Page 70-178	314.16 (C)(1): Revise 314.16(C)(2) to 314.16(C)(3)
12. Page 70-240	392.18(E): Revise 392.10(D) to 392.18(D)

Case 1:13-cv-01215-TSC Document 122-8 Filed 12/22/15 Page 77 of 174 USCA Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 514 of 537

13. Page 70-282	410.36(A): Revise 314.27(A)(A)(2) to 314.27(A)(2)
14. Page 70-287	410.130(D): Revise Part XIII to Part XII
15. Page 70-288	410.140(D): Revise Part XIV to Part XIII
16. Page 70-327	430.75(A) Exception No. 1 (a): Revise Part XI to Part XII
17. Page 70-397	504.70 Exception: Revise 501.15(F)(3) to 501.17
18. Page 70-435	Figure 516.3(C)(1): Revise 3050 m to 3050 mm
19. Page 70-435	Figure 516.3(C)(2): Revise 3050 m to 3050 mm in two locations
20. Page 70-562	645.10(B)(5): Revise 645.5(D)(2) or (D)(3) to 645.5(E)(2) or (E)(3)
21. Page 70-572	670.3(B): Revise 670.4(B) to 670.4(C)
22. Page 70-583	680.25 (B)(1): Revise 250.30(A)(8) to 250.30(A)(3)
23. Page 70-708	840.47: Revise section number from 830.47 to 840.47

Issue Date: April 8, 2011

(Note: Electronic products and pamphlet reprints may have this errata incorporated. For current information about the NFPA Codes and Standards, including this errata, please see www.nfpa.org/codelist)

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EXHIBIT 124



Errata

NFPA 70[®]

National Electrical Code®

2011 Edition

Reference: Various **Errata No.: 70-11-2**

The National Electrical Code Correlating Committee notes the following errors in the 2011 edition of NFPA 70, *National Electrical Code*.

How to Use this Errata Sheet

This is a list of errata to the first printing of the 2011 *NEC*®. A first printing is indicated by the numeral 1 as the last digit in the line of numbers appearing at the bottom of the first page.

1. Page 70-176:	Table 312.6(B), Note 3: Change reference from 310.14 to 310.106(B).
2. Page 70-190:	324.42(B): Change the reference in the last line from 800.133(A)(1)(c),
	Exception No. 2. to 800.133(A)(1)(d), Exception No. 2.
3. Page 70-233:	382.10(A): Revise last two references from 406.4(D)(3)(b) &
	406.4(D)(3)(c).to 406.4(D)(2)(b) & 406.4(D)(2)(c).
4. Page 70-234:	382.42(B): Change cross reference from 800.133(A)(1)(c) Exception No. 2.
	to 800.133(A)(1)(d) Exception No. 2.
5. Page 70-282:	410.36(A): Correct the second cross reference from 314.27(A)(A)(2) to
	314.27(A)(2).
6. Page 70-342:	440.8: Correct cross reference from 430.87 Exception to 430.87, Exception
	No. 1.
7. Page 70-348:	450.3(B), Exception: Change cross reference to 430.72(C)(1) through
	(C)(5).
8. Page 70-815:	Change running head to "Informative Annex E".

Issue Date: January 24, 2012

(Note: Electronic products and pamphlet reprints may have this errata incorporated. For current information about the NFPA Codes and Standards, including this errata, please see www.nfpa.org/codelist)

EXHIBIT 125

Case 1:13-cv-01215-TSC Document 122-8 Filed 12/22/15 Page 81 of 174 Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 518

AN INTRODUCTION TO THE NFPA STANDARDS DEVELOPMENT PROCESS





Safety Is Everybody's Business

Disasters can occur anywhere, and they often occur when we least expect them. NFPA® codes and standards are there to provide us with ways to prevent their occurrence, manage their impact, and protect us. One of the most notable features about NFPA's Standards Development Process is that it is a full, open, consensus-based process. "Full consensus" means that anybody can participate and expect fair and equal treatment. This is because safety is everybody's business.

A Uniquely Open Process

Today's NFPA® codes and standards trace their origins to the nineteenth century development of automatic sprinkler systems. From the beginning, sprinklers performed well as extinguishing devices; however, they originally were installed in so many different ways that their reliability was uncertain.

In 1895, a small group of concerned citizens representing sprinkler and fire insurance interests gathered in Boston, Massachusetts, to discuss the different approaches. They knew that nine radically different standards for pipe sizing and sprinkler spacing could be found within 100 miles of the city. This installation nightmare had to be resolved. The group eventually created a standard for the uniform installation of sprinklers. This standard, which eventually became NFPA 13, Standard for the Installation of Sprinkler Systems, prompted the creation of NFPA as an organization and was NFPA's first safety document. Today NFPA develops some 300 safety codes and standards that deal with a range of subjects related to fire, electrical, chemical, building, and life safety.

NFPA codes and standards can be found in use throughout the world. Whether it's in a computer room in the Pentagon, a research station in Antarctica, a power plant in the Middle East, the space shuttle, the hometown drycleaner or perhaps a historical library in Scotland, NFPA codes and standards are used to provide safety to life and protection of property.

Filed 12/22/15 Page 84 of 174 Filed: 01/31/2018 Page 521 of

What the Process can do for you

Who Is NFPA?

Founded in 1896, NFPA grew out of that first meeting on sprinkler standards. The *Bylaws* of the Association that were first established in 1896 embody the spirit of the codes and standards development process. Article 2 of these bylaws states in part:

"The purposes of the Association shall be to promote the science and improve the methods of fire protection and prevention, electrical safety and other related safety goals; to obtain and circulate information and promote education and research on these subjects; and to secure the cooperation of its members and the public in establishing proper safeguards against loss of life and property."

The NFPA mission today is accomplished by advocating consensus codes and standards, research, training, and education for safety related issues. NFPA's *National Fire Codes®* are administered by more than 250 Technical Committees comprised of approximately 8,000 volunteers and are adopted and used throughout the world. NFPA is a nonprofit membership organization with more than 70,000 members from over 100 nations, all working together to fulfill the Association's mission.

What type of people are NFPA members? NFPA membership is comprised of architects and engineers (22%); business and industry (5%); health care facilities (12%); fire service (20%); insurance (3%); federal, state, and local government (9%); safety equipment manufacturers and distributors (12%); trade and professional associations (6%); and other fields and disciplines (11%).

The Making of an NFPA Code or Standard

The NFPA Board of Directors has general charge of all of the activities of the NFPA. The Board of Directors issues all of the rules and regulations that govern the development of NFPA codes and standards. The Board also appoints a 13-person Standards Council to oversee the Association's standards development activities, administer the rules and regulations, and serve as an appeals body.

Members of the Standards Council are thoroughly familiar with the standards development functions of the Association and are selected from a broad range of interests. Appointed by and reporting to the Standards Council are the more than 250 Technical Committees and Panels that serve as the primary consensus bodies responsible for developing and revising NFPA codes and standards. In addition to acting on their own proposed changes, these Technical Committees and Panels act on proposed changes to NFPA documents that can be submitted by any interested party.

Filed 12/22/15 Page 85 of 174 Filed: 01/31/2018 Page 522 of

To conduct their work, Committees and Panels are organized into projects with an assigned scope of activities. Depending on the scope, a project may develop one code or standard or a group of related codes and standards, and the project may consist of a single Technical Committee or multiple Committees and Panels coordinated by a Correlating Committee that oversees the project to resolve conflicts and ensure consistency.

Rules and Participants

The primary rules governing the processing of NFPA codes and standards are the NFPA Regulations Governing the Development of NFPA Standards.

Other applicable NFPA rules include the *Bylaws*, the *Technical Meeting Convention Rules*, the *Guide for the Conduct of Participants in the NFPA Standards Development Process*, and the *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council*. All rules and regulations are available on request from NFPA or can be downloaded from NFPA's website at www.nfpa.org/regs. This pamphlet is intended to give general information on NFPA's standards development process. All participants, however, should refer to the actual rules and regulations for a full understanding of this process and for the rules that govern participation.

Participants in NFPA's standards development process are as follows:

- Interested parties including the general public
- Technical Committees, Panels, Correlating Committees
- NFPA Membership
- Standards Council
- NFPA Board of Directors



Starting a New Project

Anyone can submit a request for a project to develop a new code or standard in accordance with NFPA Regulations, provided the necessary information is submitted on the New Project Initiation Form (www.nfpa.org/newprojectidea). The Standards Council reviews all requests and, if appropriate, directs that a notice be published in *NFPA News*, and on the NFPA website (www.nfpa.org). This notice asks for:

- input or need on the proposed project;
- information on organizations that may be involved in the subject matter;
- a listing of available resource material; and
- an indication of who is willing to participate in the project if it is approved.

The Standards Council reviews all input and information it receives about the proposed new project and, if the Standards Council determines the proposed project should proceed, it either assigns the project to an existing Technical Committee or Panel, or establishes a new one.

The mission of the nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education.



Establishing a Consensus Body

In the NFPA standards development process, NFPA Technical Committees and Panels serve as the principal consensus bodies responsible for developing and updating all NFPA codes and standards. Committees and Panels are appointed by the Standards Council and typically consist of no more than thirty voting members representing a balance of interests. NFPA membership is not required in order to participate on an NFPA Technical Committee, and appointment is based on such factors as technical expertise, professional standing, commitment to public safety, and the ability to bring to the table the point of view of a category of interested people or groups. Each Technical Committee is constituted so as to contain a balance of affected interests, with no more than one-third of the Committee from the same interest category. The categories generally used by the Standards Council to classify Committee members are summarized below. The Committee must reach a consensus in order to take action on an item.

Classification of Committee Members













Authority

Labor

Maintainer

Installer/

Manufacturer







Applied Research/ **Testing Laboratory**

Special Expert

The Standards Development Process

The NFPA process encourages public participation in the development of its codes and standards. All NFPA codes and standards (also referred to here as NFPA "Standards") are revised and updated every three to five years in revision cycles that begin twice each year and that normally take approximately two years to complete. Each revision cycle proceeds according to a published schedule that includes final dates for all major events in the process. The process contains four basic steps as follows:

- 1. Input Stage;
- 2. Comment Stage;
- Association Technical Meeting;
- 4. Council Appeals and Issuance of Standard.

Standards Development Process Facts:

- Standards are updated every three to five years.
- Approximately 8,000 volunteers serve on NFPA Technical Committees.
- Technical Committees and Panels represent a variety of balanced interests.
- Approximately 250 different Technical Committees and Panels are responsible for document development.



STEP 1 - Input Stage

Public Input. As soon as the current edition is published, the development of the revised edition begins. A new or revised NFPA Standard enters one of two revision cycles available each year (annual or fall cycle). The revision cycle begins with the acceptance of Public Input, the public notice asking for any interested party to submit input on an existing Standard or a committee-approved new draft Standard. The Call for Public Input is published in *NFPA News*, the *U.S. Federal Register*, the American National Standards Institute's *Standards Action*, on NFPA's website, and other publications. The electronic submission system is available on NFPA's website on the document's information page at www.nfpa.org/document# (example: www.nfpa.org/101). After the Public Input closing date, the Committee or Panel has a period after the closing date to hold their First Draft Meeting.

First Draft Meeting. After the Public Input closing date, the Technical Committee or Panel holds their First Draft Meeting where the Committee revises the Standard. The Committee considers and provides a response to all Public Input. The Committee will use the input in order to help develop First Revisions to the Standard which results in a complete and fully integrated draft known as the First Draft. The First Draft has initial agreement by the Committee based on a simple majority vote during the Meeting to establish a consensus. The final position of the Committee is established by a ballot.

Committee Ballot on First Draft. The First Revisions developed at the First Draft Meeting are balloted; this means that the text the Committee wants revised in the Standard is on the ballot for approval by the Committee. Committee-approved revisions are called First Revisions, and each must be approved by two-thirds of the Committee to appear in the First Draft. Any First Revisions that do not pass the ballot appear in the First Draft Report as Committee Inputs.

First Draft Report Posted. The First Draft Report is posted on the NFPA website. The First Draft Report serves as documentation of the Input Stage and is published for public review and comment. The First Draft Report consists of the First Draft, Public Input, Committee Input, Committee and Correlating Committee Statements, Correlating Input, Correlating Notes, and Ballot Statements. The Report also contains a list of Technical Committee and Correlating Committee Members. The public reviews the First Draft Report in order to submit Public Comments on the First Draft, leading to the next stage of the process.

STEP 2 - Comment Stage

Public Comment. Once the First Draft Report becomes available, there is a public comment period during which anyone may submit a Public Comment on the First Draft. Any objections or further related changes to the content of the First Draft must be submitted at the Comment stage. After the Public Comment closing date, the Committee has a period of time to hold their Second Draft Meeting.

No Public Comments Received-Consent Document. Where no Public Comments are received and the Committee agrees that no Second Revisions are needed, the document does not continue through the Comment Stage and is sent directly to the Standards Council for issuance. Such documents are referred to as Consent Standards. When Public Comments are received and/or the Committee has additional revisions, a Second Draft Meeting is held and the Comment Stage continues.

Second Draft Meeting. After the Public Comment closing date, the Technical Committee or Panel holds their Second Draft Meeting. The Committee starts with the First Draft and makes any additional revisions to the draft Standard. All the Public Comments are considered, and the Committee provides an action and response to each Public Comment. The Committee will use the Public Comments in order to help develop Second Revisions to the Standard which results in a complete and fully integrated draft known as the Second Draft. Like the First Draft, the Second Draft has initial agreement by the Committee based on a simple majority vote during the Meeting to establish a consensus. The final position of the Committee is established by a ballot.

Committee Ballot on Second Draft. The Second Revisions developed at the Second Draft Meeting are balloted; this means that the text the Committee wants revised in the Standard is on the ballot for approval by the Committee. Committee-approved revisions are called Second Revisions, and each must be approved by two-thirds of the Committee to appear in the Second Draft. Any Second Revisions that do not pass the ballot appear in the Second Draft Report as Committee Comments.

Second Draft Report Posted. The Second Draft Report is posted on the NFPA website. The Second Draft Report serves as documentation of the Comment Stage and is published for public review. It consists of the Second Draft, Public Comments with corresponding Committee Actions and Committee Statements, Correlating Notes and their respective Committee Statements, Committee Comments, Correlating Revisions, and Ballot Statements. The Report also contains a list of Technical Committee and Correlating Committee Members. The public reviews the Report in order to decide if they want to submit a NITMAM (see Step 3).

STEP 3 - Association Technical Meeting

Following the completion of the Input and Comment stages, there is further opportunity for debate and discussion of issues through the Association Technical Meeting (Technical Meeting) that takes place at the NFPA Conference & Expo® each June.

Notice of Intent to Make a Motion (NITMAM). Where authorized, anyone who is not satisfied with the work of the Committee can submit a NITMAM. A NITMAM is an amending motion that will be heard by the NFPA Membership for consideration and debate at the Association Technical Meeting; these motions are attempts to change the resulting final Standard from what the Committee submitted for consideration as the Second Draft. Those Standards with no NITMAMs move directly to Standards Council for issuance (see Step 4). The Association Technical Meeting provides an opportunity for the NFPA membership to amend the Technical Committee Reports (i.e., the Committee's or Panel's work) on each proposed new or revised Standard.

Before making an authorized motion at an Association Technical Meeting, the intended maker of the motion must file, in advance of the session, and within the published deadline, a NITMAM. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all proper amending motions. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other so that they can be made in one single motion. A Motions Committee report is published in advance of the Association Technical Meeting listing all certified motions. Only Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) are permitted at the Association Technical Meeting.

The specific rules for the types of amending motions that can be made and who can make them are set forth in NFPA's rules, which should always be consulted by those wishing to bring an issue before the membership at an Association Technical Meeting.

Filed 12/22/15 Page 92 of 174 Page 529 d Filed: 01/31/2018

What Amending Motions are Allowed. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed Standard based on published Second Revisions, Public Comments, and Committee Comments. Allowable motions include motions to accept Public and Committee Comments in whole or in part, to reject a Second Revision (change accepted by the Committee) in whole or part and can include the related portions of First Revisions. In addition, under certain specified instances, motions can be made to return an entire NFPA Standard to the Committee. This means the Standard will not be issued at this time and will be returned to the Committee to continue its work.

Who Can Make Amending Motions. Those authorized to make motions are also regulated by NFPA rules. In the case of a motion to Accept a Public Comment or an Identifiable Part of a Public Comment, the maker of the motion is limited by NFPA rules to the original submitter of the Comment or his or her duly authorized representative. In all other cases, anyone can make these motions. For a complete explanation, NFPA rules should be consulted.

Action on Motions at the Association Technical Meeting. In order to actually make a Certified Amending Motion at the Association Technical Meeting, the maker of the motion or his or her designated representative must sign in at least one hour before the Technical Meeting begins. In this way a final list of motions can be set in advance of the Technical Meeting. The presiding officer in charge of the Technical Meeting opens the floor to motions on the Standard from the final list of Certified Amending Motions as sequenced by the Motions Committee followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the session and have registered for the Technical Meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee or Panel, which conducts a written ballot on all successful amending motions following the meeting and prior to the Standard being forwarded to the Standards Council for issuance.

STEP 4 - Council Appeals and Issuance of Standard

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA standards development process, is to act as the official issuer of all NFPA codes and standards.

Consent Standards. Some Standards receive no controversial proposed changes, and therefore, no NITMAMs are filed. In some cases, NITMAMs are submitted on Standards up for revision, but none of the NITMAMs are certified as proper by the Motions Committee. In both these cases where no NITMAMs are submitted or no NITMAMs are certified as proper for a specific Standard, the Standard is not placed on the agenda for the Association Technical Meeting, but is instead sent directly to the Standards Council for issuance. Such Standards are referred to as Consent Standards.

Issuance of Standards. When the Standards Council convenes to issue an NFPA Standard it also hears any appeals related to the Standard. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a Standard before it, the Council, if appropriate, proceeds to issue the Standard as an official NFPA Standard. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA Standard becomes effective twenty days after Standards Council issuance.

Case 1:13-cv-01215-TSC Document 122-8 Filed 12/22/15 Page 94 of 174 Case #17-7039 Document #1715850 Filed: 01/31/2018 Page 531 of 174 Page 531

Sequence of Events for the Standards Development Process

As soon as the current edition is published, a Standard is open for Public Input.

Step 1 – Input Stage

- Input accepted from the public or other committees for consideration to develop the First Draft
- Committee holds First Draft Meeting to revise Standard (23 weeks)
 Committee(s) with Correlating Committee (10 weeks)
- Committee ballots on First Draft (12 weeks)
 Committee(s) with Correlating Committee (11 weeks)
- Correlating Committee First Draft Meeting (9 weeks)
- Correlating Committee ballots on First Draft (5 weeks)
- · First Draft Report posted

Step 2 - Comment Stage

- Public Comments accepted on First Draft (10 weeks)
- If Standard does not receive Public Comments and the Committee does not wish to further revise the Standard, the Standard becomes a Consent Standard and is sent directly to the Standards Council for issuance (see Step 4)
- Committee holds Second Draft Meeting (21 weeks)
 Committee(s) with Correlating Committee (7 weeks)
- Committee ballots on Second Draft (11 weeks)
 Committee(s) with Correlating Committee (10 weeks)
- Correlating Committee First Draft Meeting (9 weeks)
- Correlating Committee ballots on First Draft (8 weeks)
- Second Draft Report posted

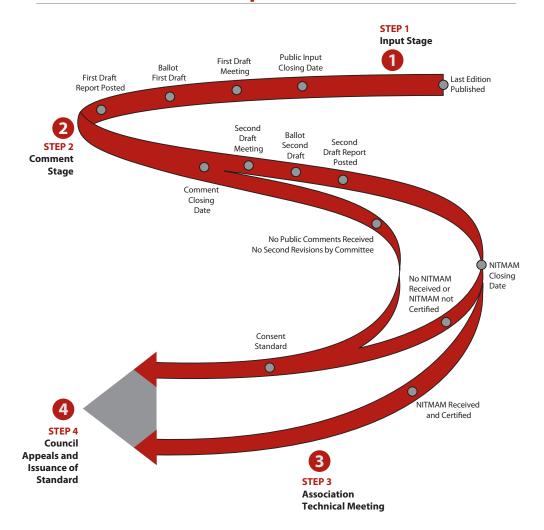
Step 3 – Association Technical Meeting

- Notice of Intent to Make a Motion (NITMAM) accepted (5 weeks)
- NITMAMs are reviewed and valid motions are certified for presentation at the Association Technical Meeting
- Consent Standard bypasses Association Technical Meeting and proceeds directly to the Standards Council for issuance
- NFPA membership meets each June at the Association Technical Meeting and acts on Standards with "Certified Amending Motions" (certified NITMAMs)
- Committee(s) and Panel(s) vote on any successful amendments to the Technical Committee
 Reports made by the NFPA membership at the Association Technical Meeting

Step 4 - Council Appeals and Issuance of Standard

- Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the Association Technical Meeting
- Standards Council decides, based on all evidence, whether or not to issue the Standard or to take other action

The Standards Development Process



Notes on Sequence of Events for the Standards Development Process:

- Time periods are approximate; refer to published schedules for actual dates.
- It takes approximately 101 weeks for Annual revision cycle documents receiving certified amending motions.
- · It takes approximately 141 weeks for Fall revision cycle documents receiving certified amending motions.

Resources

NFPA Offers Resources to Support its Standards Development **Process and Improve Public Safety**

NFPA documents are constantly evolving based on extensive public input and the dedicated involvement of highly qualified committee and panel volunteers. NFPA Technical Committees and others work to keep their documents current with the latest knowledge and technologies. In addition to the time and resources contributed by the thousands of dedicated volunteers, the Association helps facilitate the work of the Technical Committees and otherwise promotes NFPA's public safety mission with these important resources:

- 1. Statistical Data: The Fire Analysis and Research Division's One-Stop-Data-Shop (OSDS) produces a large range of annual reports and special studies on the aspects of the nation's fire problems. The data from the OSDS may be requested by Technical Committee Chairs or Staff Liaisons regarding a specific fire hazard or safety issue. National estimates of specific fire problems are generally compiled from the NFPA survey with details from the United States Fire Administration's National Fire Incident Reporting System (NFIRS). Various other data resources are also used as appropriate.
- 2. Event Analysis: In order to provide new information and learn lessons that can assist NFPA Technical Committees and others, the NFPA Fire Investigations Department conducts on-site investigations of disasters or near-disasters occurring all around the world. The department's reports analyze significant events (e.g., fires or explosions) focusing on how NFPA codes and standards were utilized and how NFPA codes and standards might have provided additional protection in cases where the documents were not followed.
- 3. Research: The Fire Protection Research Foundation (FPRF) is an important resource for the NFPA codes and standards making process. The FPRF conducts independent research on specific topics of relevance to NFPA's technical committee and codemaking panel projects. Research reports are published and are utilized by Technical Committees as a resource for pertinent up-to-date information. From time to time, Committees will directly seek specific research to be done regarding the subject covered by their document. The FPRF will determine whether or not the specific study has been done before, and if it has not, they can facilitate obtaining the needed information from research, testing, consulting, or other sources. Some of these projects are completed using the FPRF/NFPA Code Fund, which is supported each year by a financial contribution from NFPA. Any representative from the Technical Committees can submit ideas to the Code Fund. The submitted project ideas are reviewed on an annual basis.

- 4. Empowerment Through Education: The NFPA Public Education Division is the source of fire and other hazard information to reduce residential fire deaths, injury, and property loss. The division focuses on three objectives:
- Position the NFPA Public Education Division as the primary source for fire and life safety information.
- Continuously improve strategies to train the fire service how best to reach high-risk populations.
- Increase awareness of and involvement in Fire Prevention Week.

Activities within the division include reaching out to local fire departments and schools through fire safety campaign kits and an annual Scholastic project, networking with state/provincial fire safety educators, providing fire safety information on nfpa.org and fun activities on sparky.org, advancing various training opportunities at the NFPA Conference & Expo, producing the monthly Safety Source e-newsletter, and maintaining technically correct fire safety messaging through the Educational Messages Advisory Committee. High-risk outreach activities engaging the very old, very young, urban and rural poor, and people with disabilities are an integral part of NFPA's public education efforts. These activities include outreach to urban communities, older adults, people with disabilities and Latino populations. NFPA's public education programs include the Learn Not to Burn® Preschool Program and Remembering When™: A Fire and Falls Prevention Program.

NFPA is the official sponsor of Fire Prevention Week each year to increase public awareness of the importance of fire safety education. Fire Prevention week is held throughout the U.S. and Canada during the week of October 9, to commemorate the anniversary of the Great Chicago Fire. For more than 85 years, NFPA has established the theme and developed the proclamation signed by the President of the United States each year. NFPA also devotes resources to a campaign of theme-related products and materials to help communities promote local programs related to Fire Prevention Week.

5. Literature Archives: The Charles S. Morgan Technical Library is one of the main resources used by Technical Committees to obtain both current and archival information pertinent to NFPA codes or standards. Library staff can assist committee members in tracing changes to codes, providing previous substantiation and supporting documents, and researching the origins of an article or paragraph. The library contains a large fire science collection, with more than 28,000 books, technical reports, videos, journals, and non-NFPA codes. Unique to the collection are Proceedings from NFPA and NBFU annual meetings, papers presented at NFPA annual meetings, original NFPA and NBFU standards going back to 1896, older technical committee reports and comments, and copies of NFPA publications.

- **6.** Annual Conference: NFPA's Conference & Expo takes place each June and is one of the premier events of its kind. The Conference & Expo entails both the NFPA Annual Meeting and the Association Technical Meeting where NFPA proposed codes and standards are brought to the NFPA membership for debate and voting. It also features guest speakers and hundreds of educational programs as well as the country's largest exposition on fire and life safety products and services.
- 7. Worldwide Communications: NFPA Public Affairs Department oversees the corporate communications activities of the Association and coordinates public awareness and media inquiries, especially following highly publicized fire incidents and other disasters when the news media and others look to NFPA for information.
- **8. Technology Features:** One of today's most important communication tools is the NFPA website, which provides direct support for the standards development process including the electronic submission system of public input and comments. To view document and committee specific information for a relevant NFPA code or standard, go to the document information pages on our website at: www.nfpa.org/document# (example: www.nfpa.org/101).
- 9. Community Partnerships: To better serve the safety community, other constituents, and its members, NFPA has established Regional Offices throughout North America and an International Operations Division which has offices in Asia, Europe, and Latin America. The primary objective of these offices is to assist constituents with the adoption and formal recognition for the use of NFPA codes and standards. NFPA endeavors to reach every audience with necessary safety information and publishes a wide range of handbooks, reference books, textbooks, videos, field guides, and training manuals.
- 10. Technical Questions: NFPA's 35+ person Technical and Engineering Staff serve as the staff liaisons to the NFPA Technical Committees that develop the codes and standards. These staff members are available to NFPA members and public sector officials to answer questions about the codes and standards. Each year, the staff handles tens of thousands of inquiries. For more information about submitting your questions, go to the "Technical Questions" tab on the document information pages.
- 11. Higher Learning: The Professional Development Department conducts specialized training seminars and workshops on NFPA codes and standards and other safety-related subjects. These popular sessions are offered to the general public but are often held for a particular audience. Training seminars and workshops occur regularly around the world and provide the latest information on the application of NFPA codes and standards as well as other state-of-the-art safety related technologies.
- 12. Certification: NFPA's Certification Department presently offers four recognized certification programs designed to document the minimum competency of and professional recognition to those individuals within the specified field of practice. Based on NFPA codes, standards, and technical publications, the programs are: Certified Fire Protection Specialist, Certified Fire Inspector I and II, and Certified Fire Plan Examiner. Information for each of the programs is available at www.nfpa.org/certification.

The Life Safety Code® and National Electrical Code® are in use in all 50 states in the U.S. and in numerous other countries.

How NFPA Codes and Standards are Used

NFPA codes and standards are widely adopted and used as a basis for safety regulation by government agencies as well as for private use and quidance by insurance companies, industry, and professionals and others in the areas of fire, electrical, building, and life safety. For example, NFPA aviation documents are referenced by airports throughout the world. As a further example, in the United States scores of NFPA codes and standards have been referenced by the federal government's Occupational Safety and Health Administration, the Veterans Administration, the Department of Health and Human Services, the Department of Defense, and other federal agencies.

NFPA develops "full consensus" codes and standards — codes and standards built on a foundation of maximum participation and substantial agreement by a broad range of interests. This philosophy has led to the production of reasonable, usable codes and standards that promote public safety, yet do not stifle design or development. NFPA prides itself in supporting a flexible system that depends largely on volunteers and therefore produces timely, high quality, consensus based safety codes and standards at no cost to taxpayers. Safety is everybody's business. Everyone deserves to be heard when it comes to safety. That's why, after more than 100 years, the NFPA codes and standards process has evolved into one of the fairest and most effective technical document development systems the world has ever seen.

Further Information

For further information on the NFPA standards development process, please visit the NFPA homepage at www.nfpa.org or consult the current edition of the NFPA Standards Directory. The homepage and the Standards Directory contain the Regulations Governing the Development of NFPA Standards, updated schedules for processing documents for the Annual and Fall revision cycles, the Guide for the Conduct of Participants in the NFPA Standards Development Process, and other important standards development related information.

To obtain general information regarding the standards development process, contact:

NFPA Codes & Standards Administration Department

One Batterymarch Park Quincy, MA 02169-7471 USA

Phone: 617-770-3000 (until 5:00 PM EST)

Fax: 617-770-3500

email: stds admin@nfpa.org

Other general information on the NFPA can be obtained by contacting:

NFPA Headquarters:

One Batterymarch Park, Quincy, MA 02169-7471 USA Phone: 617-770-3000 (until 5:00 PM EST) Fax: 617-770-0700 http://www.nfpa.org

NFPA Customer Contact Center for Service/Sales/Membership/Technical Questions:

custserv@nfpa.org

U.S. & Canada

Phone: 800-344-3555 (8:30-5:00 PM EST)

Fax: 800-593-6372

Outside U.S. & Canada

Phone: 508-895-8300 Fax: 508-895-8301

NFPA International Department Departamento Internacional:

In Spanish / en español

Phone: 617-984-7700 Fax: 617-984-7777

global@nfpa.org

An international nonprofit membership organization established in 1896 and dedicated to reducing the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.

Publishers of the National Fire Codes, including the National Electrical Code and the Life Safety Code.

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